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NEWS SUMMARY

SIR WILLIAM HOLFORD, has been recommended by the City Corporation's Improvements and Town Planning Committee to prepare detailed proposals for the planning and architectural treatment of the area around St. Paul's Cathedral. This follows the MoHLG's modifications to the County of London Development Plan, which are the subject of comments by the committee. p. 542

NEW PLANS for the rebuilding of Wellington Barracks, Birdcage Walk, are being prepared by the War Office architectural staff, the Secretary of State for War has announced. p. 552

PREFABRICATION ON A MODULAR BASIS can effect a major economy in architects' offices, Mr. W. A. Allen, ARIBA, of the Building Research Station, told a meeting of the Modular Society last week. p. 554

DEMAND FOR BUILDING should continue to increase this year, and a large amount of industrial building is coming forward, according to the Government's Economic Survey, 1955, published on Tuesday. p. 556

THE MONOPOLIES COMMISSION is to be informed by the Regional Hospital Board for South-Eastern Scotland that when the Board recently asked for tenders for steelwork at a Kirkcaldy hospital all five tenders quoted were the same. p. 559

RESULTS OF TESTS by British Railways on the use of 0.276 in. dia. smooth wire for pre-tensioning in the manufacture of prestressed concrete beams have been announced. p. 561

THE FIRST RESIDENTIAL COURSE for Builders' Foremen not just in Britain, but in Western Europe, has been held in Suffolk under the auspices of the Eastern Federation of Building Trades Employers. p. 563

TROPICAL ARCHITECTURE

THE first course of study of tropical architecture to have been held in this country has just ended. A reception was held last week at the Architectural Association to mark the occasion, when some examples of the work of the Department of Tropical Architecture were on view and successful students were presented with certificates. Nearly 30 students have attended the course which ran for six months; about ten of these have come from abroad, the remainder being students in their last year at the Architectural Association School who had elected to take the course. The Department has been under the direction of Mr. Maxwell Fry and Mr. J. McKay Spence, assisted by a panel of lecturers and critics, most of whom have overseas experience. The course was based on the assumption that the student is already grounded in design and construction, theory and practice. It concentrated on those aspects of architecture where problems are different under tropical conditions, the aim being to make the student understand the basic effects on design of climatic, sociological, economic and other factors of environment.

The origins of this course may be traced back to two events during the spring of 1953. In March of that year a Conference on Tropical Architecture took place at University College, London, under the chairmanship of Mr. Alister MacDonald. It was the first of its kind to be held in this country, and it attracted a large and representative membership. The Conference report, recently made available to the public, provides a most useful basic document on the subject of building in the tropics. At the conclusion of the conference, it was suggested that the best contribution which this country could provide was in specialised education. A resolution of the conference was that the organising committee (still in being) should; "foster improved educational facilities for students and architects interested in work in the tropics, and particularly the establishment of permanent centres for the study of architecture and planning at ordinary and post-graduate level."

A month later, Mr. G. A. Atkinson, who is Colonial Liaison Officer and Housing Adviser to the Colonial Office, talked about "British Architects in the Tropics" at the Architectural Association. He outlined the problems of building overseas which could be better met with trained architects and engineers. He pointed to four facts: that a large amount of building abroad was now of the development and welfare category rather than of the monumental Baker-Lutyens type carried out in the early years of this century; that the services of architects, in public and private spheres, were increasingly in demand; that contemporary architecture had become accepted for tropical building; and that students from overseas were coming to train in this country. At this point he reiterated the plea, made many years ago by Sir Herbert Baker, for a school in this country which took a special interest in tropical architecture. Baker had written: "What is required, I think, is a post-graduate school of students who have successfully graduated in the architectural schools of Great Britain and the Empire—and who are willing to venture on a life of

service in the Colonies. Such a school, remembering Sir Richard Livingstone's saying that education is largely 'atmosphere,' should be placed where there are other students of the allied arts and sciences which are more or less interdependent and have much to learn from each other. Architecture in the new countries may interlock with engineering; with forestry . . . ; the medical sciences, in studying the effects on health of light and heat at different altitudes in the tropics; and sociology, the study of habits and customs of the natives on which the design of their towns and villages so much depends. . . ." These thoughts are still valid for to-day. While the Architectural Association cannot offer the facilities of a university, the Principal and those responsible for the Department of Tropical Architecture have wisely enlisted the help of the London School of Hygiene and Tropical Medicine in the persons of Dr. O. Koenigsberger, Professor A. P. Crowden, and Dr. T. Bedford.

As was to be expected, the first course was in the nature of an experiment; considerable attention has been given to climatology and technical aspects. In the next course it is hoped to give more time to the social aspects. Next year, perhaps, we shall see some more designs for low-cost housing as well as the health centres, Development Board Offices, and official residences which were the subject studied by the course just ended.

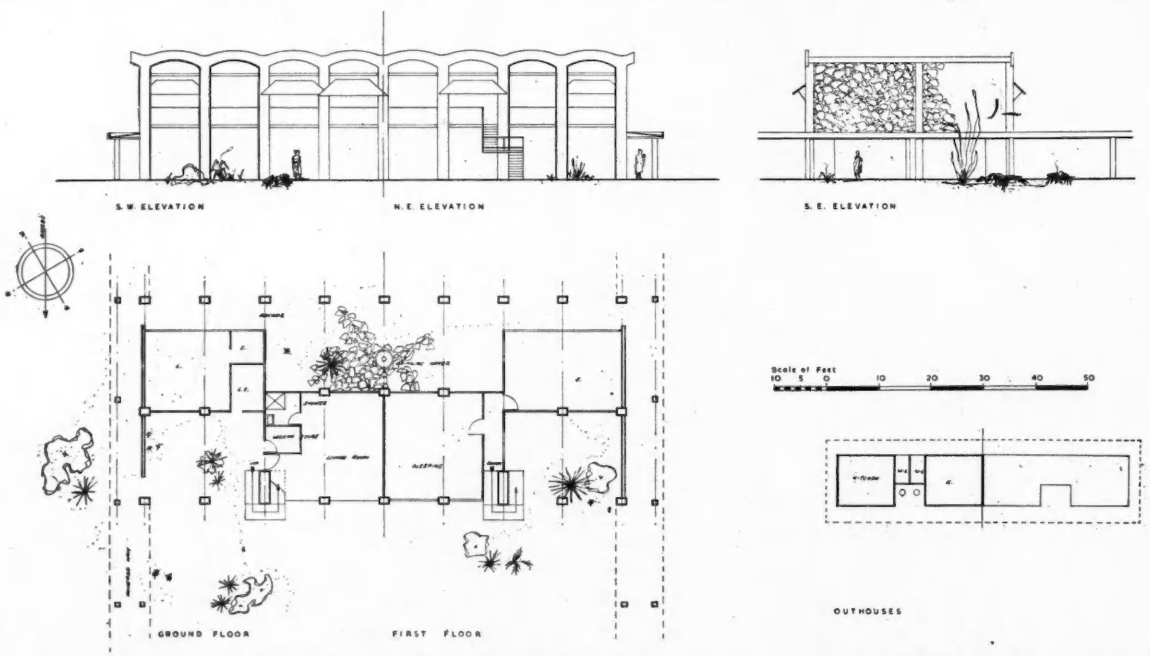
The problem of housing is one of the most pressing in the tropics to-day. Mr. C. T. Carstairs, of the Colonial Office, made the point well at the Conference of 1953 when he said: "I am not sure that full weight has been given to one aspect of this urban housing problem. It is, in fact, what 'progress' means to millions of the people concerned. . . . I believe that on the actual living conditions in the new expanding towns of Africa, Asia, Central and South America will depend the whole temper of the new civilisations which are rapidly growing up, whether the new life is regarded as a hostile thing or a friendly one. . . . I suggest that for the undeveloped peoples it is of enormous political and social importance that the all-powerful impression of a new life should be as good as we can make it, and that we should now regard workers' housing as very interesting and important—when we can get around to it."

There are encouraging signs that the problems of architectural education for the tropics are now being tackled in earnest. At Hong Kong University there is a flourishing School of Architecture under Professor Gordon Brown, formerly a Principal of the AA School. Facilities for training are also to be provided in Kenya, Nigeria and the Gold Coast. The Architectural Association is to be congratulated on entering the field in this country.

WELLINGTON BARRACKS

THE courteous reply which Mr. Head, Secretary of State for War, has sent to Sir Alfred Bossom in response to the latter's inquiry for information on the current proposal to rebuild Wellington Barracks is none the less disquieting. Mr. Head's letter (printed on page 552) indicates that the scheme prepared by Mr. Arthur Kenyon before the war has been abandoned because a change of accommodation, now proposed, has made it obsolete. A new design, to provide for one Guards Battalion only instead of two, is now being prepared "by the War Office architectural staff and under the personal direction of Mr. C. A. Richards, the Superintending Architect. The designs when prepared will have to go before the Fine Arts Commission and also be approved by the Ministry of Works."

These designs, the Minister concludes, "are still in their very early stages." This is particularly fortunate for it should give time for reconsideration of the matter. The site of the Barracks, in Birdcage Walk, is very near to Buckingham Palace, and no discourtesy is intended to the War Office architectural staff in saying that the importance of the site should justify the very best architectural attention it is possible to obtain. The same thought, no doubt, was in the minds of the Government in 1939 when a distinguished architect in private practice was commissioned to prepare a design, subsequently approved by the Royal Fine Art Commission. Mr. Head, as the capable Minister in charge of a Government Department which is better equipped for knocking down structures than for building them up, will perhaps think again.



AFRICAN HOUSING, HEADQUARTERS, OGUN RIVER: Designed by R. A. Diss (AA School of Tropical Architecture).

Notes of the Week

MODULAR CO-ORDINATION

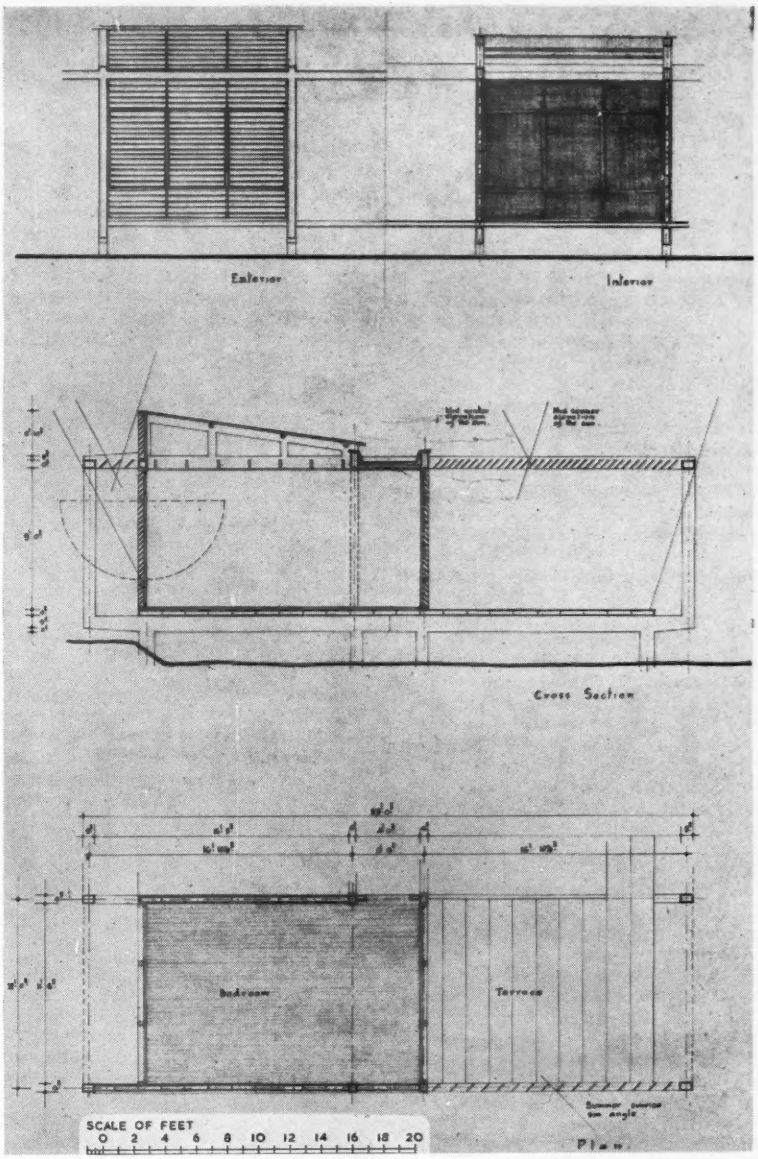
A MINOR but important aspect of Mr. W. A. Allen's paper to the Modular Society (abstracted elsewhere in this issue) was its serving to allay any lingering misgivings about either overlapping or watertight activities by different official bodies concerned, working along parallel or (worse) divergent lines. This review, the counterpart of Bruce Martin's description of the BSI Group's approach, unmistakably suggested concerted forward movement in a problem which, by its nature, demands the fullest degree of agreement.

Though Allen's treatment was unexpectedly cautious and objective, it carried great conviction by the brisk and matter-of-fact disposal of points from which a certain overlay of *mistique* seemed once to need dispersing. His references, for instance, to Le Corbusier's Modulor seemed an eminently fair putting in perspective of what Mark Hartland Thomas once described as the " poetry " of a subject of which the Society was concerned with the prose.

I confess to relief at not having to paraphrase the paper, writes Basil Marriott. Never having been good at maths, I was soon out of my depths in Allen's bubbling wake, and was consoled to hear that others of the audience apparently also needed some breathing-space on terra firma to consider the precise application of the " number pattern " he propounded, though it was a help that this had literally emerged, as his title suggested, in visual form. It showed by a process of elimination which multiples might be omitted from a full numerical sequence while retaining enough of them having rational inter-relationship for working purposes. He did not minimise the problems ahead, though he modestly played down the significance of what had already been achieved by his team. The discussion indicated that the well-balanced constitution of the Modular Society had found sea-food for thought in what Allen had dredged up, including some barnacled old hulks in the way of recurring and intractible snags.

FLEET STREET STILLED

CAMBRIDGE had won the Boat Race: Wales had beaten France. With monotonous reiteration the BBC repeated the news of the day. But what had Sefton Delmer discovered meantime? What had James Cameron been prevented from writing? What had the Thunderer prepared for our delectation on the Grand National? Was Nye really going to see Clem before Wednesday's meeting? And what of the election? Was it on or off? Had Winston changed his mind again, or had the Tories given up the struggle to force him out? What had William Hickey had for lunch? No one will ever know. Not even John Gordon, who started " wandering " last week—in a first-class sleeper from Euston to Fort William—to re-discover the Isle of Skye, with cocktails to follow at Portree, could make his voice heard. Fleet-street, by edict of the AEU and the ETU, was silent.



A HOUSE IN ACCRA: Designed by Bill Gillitt (AA Department of Tropical Architecture). A brief specification is: Corrugated aluminium roofing on tubular aluminium purlins. Precast concrete truss. Metal rain-water gutter to fall of 1 in. in 1 ft., supported by cast in-situ concrete longitudinal and transverse stiffening beam. Match boarded ceiling on 6 in. by 1½ in. timber joists. Precast concrete frame and edge beam. Timber wall panels with adjustable louvres, backed by mosquito netting in bedrooms. Central frames made to open. Cross walls of 5 in. by 9 in. by 18 in. concrete blocks, plastered. Hardwood strip flooring on screed. Precast 4 in. by 18 in. by 12 ft. concrete floor planks.

O tempora: O demarcation agreements! The London Builders' Conference never did anything like this. Brave new world!

" ARCHITECT AND INDUSTRY "

THAT the modern architect's training and experience equip him with exactly the knowledge and skill needed to design new and to extend and to alter existing factories is undoubtedly not as well known to industrialists as it should be. To help remedy this the RIBA have produced a pamphlet, " The Architect and Industry," for distribution at their stand at the current Third National Factory Equipment Exhibition, which remains open until tomorrow (April 2) at Earls Court, London.

NEW BARBICAN PROJECT

THE SECOND round in the tussle to secure the approval of the Court of Common Council of the City of London to the New Barbican Scheme, opened this week. The council has already rejected the scheme once, mainly because the first

application for outline planning approval was not accompanied by an Industrial Development Certificate.

Sir Gerald Barry, chairman of the New Barbican Committee, announced in London on Monday that the necessary certificate had now been obtained and that the application was to be renewed. Along with the fresh application, the committee will submit a statement containing answers to the various criticisms of the scheme which were made by the City's Improvements and Town Planning Committee.

The New Barbican Scheme, Sir Gerald reiterated, envisaged the redevelopment of the 40 devastated acres of the City of London between Aldersgate-street, Barbican and Moorgate. The plan includes a residential neighbourhood for 4,000 people and car parking facilities for at least 3,000 vehicles, as well as shops, warehouses and tall office blocks.

At Monday's meeting, which was held at the House of Commons, a short film was shown, together with a remarkable three-dimensional model of the scheme.

The promoters of the New Barbican project have succeeded in enlisting a large body of support. Most of the opposition to the scheme seems to spring from a natural doubt that the enormous sum of money needed to finance the project would not be forthcoming. The promoters, however, are confident that once the scheme is officially approved the money will be found without difficulty.

If the Court of Common Council turn down the renewed application, the promoters will appeal to the Minister.

FRENCH IDEAL HOME

CANDID COMMENT on the French exhibition-goer is given in the bulletin of the "Salon des Arts Menagers" (the Paris equivalent of the Ideal Home Exhibition). The million-and-a-half visitors at the recent show each spent on average £5, 80 per cent. being on hire purchase. Best days for business were Saturdays and Sundays ("when housewives were able to drag husbands along, and with them their cheque books"); quietest days Fridays ("more furs and more expensive scent but little or no business"), and worst days Thursdays ("school closing day. Raging urchins on that day drive exhibitors out of their minds as they try not to give away all their publicity leaflets, drag fiends out of gas ovens, save little girls from drowning in washing machines, and prevent yet other devils from enticing younger brothers and sisters to poke their fingers into mangles." A good time was obviously had by *tous*.

COMING EVENTS

MONDAY, APRIL 4

RICS.—"Why Put Your Money in Land?" by Mr. W. M. Balch, FRICS. 12, Great George-street, SW1. 5.30 p.m.

TUESDAY, APRIL 5

RIBA.—Presentation of Royal Gold Medal for Architecture to Mr. J. Murray Easton, FRIBA. 66, Portland-place, W1. 6 p.m.

WEDNESDAY, APRIL 6

LONDON BUILDERS' FOREMEN'S ASSOCIATION.—"Bridge Construction," by Mr. J. N. C. Couper, BA. Memorial Hall, Farringdon-street, EC4. 6.15 p.m.

RICS (JUNIOR ORGANISATION).—"Painting Defects —Their Causes and How to Avoid Them," by Mr. Graham C. Johnson, 12, Great George-street, SW1. 6.15 p.m.

CORRESPONDENCE

EXIT SUPERMAN

To the Editor of *The Builder*

SIR,—I was interested to see from the report in the current issue of the RIBA *Journal* of the discussion on Dr. Bronowski's recent paper on "Architecture as a Science and Architecture as an Art," that Miss Jennifer Hodgson tackled the lecturer on the underlying implication of the address, that "the architect must fit himself for solving all parts of the work in his own person."

"Would he" [the lecturer] she asked, "advocate that I and my student friends should be structural engineers, prestressed concrete engineers, artists and painters and everything else?"

"Yes, yes, and a thousand times yes," replied Dr. Bronowski, though he qualified this emphatic affirmative a little later by adding: "No one wants you to work the slide rule, but you must not be at the bidding of the man with the slide rule."

Many who are about to enter, or have already entered, the architectural profession, will be relieved to know that Dr. Bronowski did not really mean that they must become omnicompetent and design everything in a building from the engineering structure to the mural decorations (if any). As you, Sir, said in your leading article of March 4: "Much must be delegated in the practice of a profession, the conditions of which are becoming increasingly complex." It would appear that Dr. Bronowski, on second thoughts, was roughly of that opinion himself.

G. J. H.

ARCHITECTURAL COMPETITION

To the Editor of *The Builder*

SIR,—There were 112 competitors in the competition for Church House, Diocese of Liverpool [designs placed 1st, 2nd and 3rd were illustrated in *The Builder* of March 18], and say each competitor spent three months on his drawings, this would represent about 28 years' work, for one man alone at say about £1,000 per annum—(about £28,000).

The average cost of producing the necessary competition drawings is about £250 (if the average earnings of a competitor are say £1,000 per annum, to-day, as above).

The prizes offered were:—

To the author of the design placed 1st by the assessor, £800 (and if no instructions are given him within two years of the date of the award: 1½ per cent. on his estimate of cost up to £100,000 plus ½ per cent. on the next £300,000).

To the author of the design placed 2nd by the assessor, £400.

To the author of the design placed 3rd by the assessor, £200.

Probably many other "possible" competitors didn't submit their drawings, but spent much time and thought as to whether to retain the existing gothic tower, or not to retain the tower (a gamble). Are competitions of this ambiguous nature a business proposition at all, one wonders—I'm afraid the answer is definitely "No," seeing that there is now so much local controversy in the Press, regarding the non-retention of the existing old tower in the winning scheme.

On looking at the designs recently in the Walker Art Gallery, it appears that most of the competitors retained Foster's ancient massive tower in their schemes (probably thinking of Coventry Cathedral!) which apparently was wrong from the outset.

A. NEVILLE HOLT
[FRIBA]

Stock Exchange Buildings,
20, Exchange-street East,
Liverpool, 2.

Meeting of the Modular Society to discuss disciplinary action against an unco-ordinated member.

EDUCATION FOR BUILDING

To the Editor of *The Builder*

SIR,—As reported in your issue of March 18, the President of the Sheffield Building Trades Association foresees that by 1984 building operations may have 20-30 men in control with only two or three workmen. This fantastic situation is to be the result of the facilities for higher education now being granted to apprentices. The President's audience, on the occasion of this prophecy, was the Sheffield and District Clerks of Works and Foremen's Association, who were told that there is a danger of over-educating apprentices.

This kind of loose generalisation may lead foremen to discourage enthusiastic youngsters entrusted to their charge. The apprentice to-day is given greater opportunity for education than hitherto. But to derive the full benefit from that education he must still educate himself in his own time.

Surely, instead of being discouraged, apprentices should be guided and helped to make the most of the higher education now open to them. Only by intelligently

controlled higher education can young men be adequately trained for management. Efficient management is essential to an efficient industry.

All forms of education give good men the chance to improve their status, and higher education gives the best men a means of getting to the top. But perhaps more important than this is the fact that only education can produce, in members of a building organisation, from apprentice to directors, a realisation of the dual responsibility which exists between management and operatives. The two cannot be separated. Each depends on co-operation from the other if maximum efficiency is to be attained. Such co-operation depends on understanding of all the problems. Only education of a high standard can produce that understanding.

London, W2. IAN CRICHTON.

MAINTENANCE SURVEYORS

To the Editor of *The Builder*

SIR,—Your correspondent, Mr. J. Philip Elliott (*The Builder*, March 18), sets a problem which the machinery of local government may not yet have been able to solve. The creation of an apt name describing the profession responsible for the maintenance of public building property is not quite so simple as may appear at first glance.

Local authorities and similar public bodies are so diverse in character and size that any attempt to rationalise or even regularise the type of staffs needed to undertake any specific task must first take into account the complex structure of "council" services personnel; the political leaning of different authoritative bodies; and, most important, the salary ratios of different officials, together with obligations related to seniority, superannuation and sex.

It may or may not be common knowledge that the salaries of some chief officers, that is officers in charge of departments, are dictated by statute, regulation and/or by-law; and are related to such factors as the size of the electorate, or territorial extent, or rateable values. The progressive gradings and salary scales gradually diminish according to sizes of departments and the numbers of their sections; sex and service do not as a rule overlap.

Thus it is possible for two adjacent boroughs, etc., which are comparable in many respects, to employ persons with totally different qualifications to organise their repairs and at absurdly differing salary scales and gradings and with widely different responsibilities.

An authority with, say, three departments, will probably have a large number of sections to these departments and the number of top gradings will, of course, be limited to the number of departments. But an authority with approximately the same staff and undertaking, about the same extent of responsibilities but with more numerous departments, could easily have a much higher number of senior grades. Consequently the appellation bestowed upon these unhappy ladies and gentlemen (yes, ladies also serve) can vary from housing manager to works foremen; and the name cannot really be a guide to an outsider what real rank or standing such an officer holds.

Another difficulty manifest with very large departments where the maintenance man is well down the list of seniority, is that a limited delegated authority is invariably vested from a "high level." And it is not unusual that these VIPs, even when suitably experienced and abreast of the times, are unable to offer suitable technical guidance by reason of pressure of other duties. These jobs are being filled more and more by sub-technical trainees or non-technical promotees because experienced outsiders will not or cannot accept the salaries offered. In addition, experienced persons approaching middle age are not usually accepted into local government service except on a temporary basis.

I can assure your readers from inside experience that these jobs are very exacting and cannot be run like a jobbing builder's business in normal commercial life. Some of the contingencies that might be met with include the refusal to permit rubber stamp signature; the signing of several hundred documents daily; the coding with letters and words of every activity and description to facilitate the working of the treasurer's punch-card machine; inspection and check by others co-opted, but not under your control, before half a dozen screws can be issued from the stores; countersigning at difficult times by "higher level" requisitions for urgent materials; the irascibility of tenants and requisitioned property owners who are not satisfied with the extent or quality of work done, plus very often threats of appeals to councillors or even threats of bodily violence. One may also have to cope with "priority" instructions at short notice from "above" without any regard for a difficult and carefully considered depot routine. And it is not out of place to find your stores or pay staff have additions or changes at short notice with persons unsuited to take their place.

Even technical assistants, building inspectors, sanitary and sewage inspectors from other departments or sections may direct, vary or influence depot routine and decisions with little or no warning.

I feel that no local authority should have a maintenance depot, and that the best set-up would be similar to large private housing concerns: that is, to engage a private estate agent on a commission basis related to a definite permitted percentum/income costs allowance.

If it be absolutely necessary to retain "council" works organisations for maintenance then they should always be separate departments under the direct control of an experienced technician—that is someone who has been engaged on building and building repairs all his working life. And simply call them Builders.

H. E. CAMPBELL [MICW, AISanE]
40, St. Paul's-road, N1.

MR. BASIL SPENCE, OBE, ARA, ARSA, Vice-President RIBA, presenting the RIBA Bronze Medal and certificate to Mr. J. L. Womersley, ARIBA, AMTPI, former Borough Architect of Northampton, for the planning of Kings Heath shopping centre, Northampton. On the left is Mr. H. D. Williams, ARIBA, President of the Northants, Beds and Hunts Association. The Kings Heath scheme was illustrated in The Builder *of October* 30 1953.

COMPETITION NEWS

Monument to Prince Henry the Navigator

THE CLOSING DATE for the submission of drawings for the first part of the international competition, promoted by the Portuguese Government, for a monument to Prince Henry the Navigator at Sagres has been extended to May 31, 1955. Details of the competition were given in our issue of March 11.

QUALITY IN BUILDING

RIBA President's Address

UNLESS every person who worked on a building really believed that he was making a real contribution to that building, the quality of their work could not be enhanced or even maintained, said MR. C. H. ASLIN, CBE, president, RIBA, at the seventh annual prize distribution of the Building Department of the City College and Art School, Norwich, held on March 17. Mr. W. S. Lusher, chairman of the Building Advisory Committee, took the chair.

Mr. Aslin added that "some people think that all that is required for a first-class job is a lot of money and no restrictions. That is all nonsense. The greater the restrictions, within limits, the better the work done." He instanced a top limit placed by the Ministry of Education on school building, which had prompted the industry to develop new and economical techniques.

MONOPOLIES COMMISSION

The Monopolies and Restrictive Practices Commission have announced that, with the approval of the Board of Trade, they have appointed Mr. J. A. R. Pimlott, CB, to be their Secretary in succession to Mr William Hughes, CB, who will be returning to the Board of Trade shortly at the end of his period of secondment.

ST. PAUL'S CATHEDRAL PRECINCT

Proposals for Planning and Architectural Treatment of the Area

A REPORT on the effect of the modifications in the County of London Development Plan (announced on March 7 by the Minister of Housing and Local Government when he gave approval to the plan) was submitted yesterday (March 31) to the Court of Common Council of the City of London by the Corporation's Improvements and Town Planning Committee. The report is mainly concerned with proposals for St. Paul's Precinct, in regard to which the committee has made the following recommendations:—

(1) That Sir William Holford, MA, FRIBA, MTPI, be appointed by the Corporation (in agreement with the London County Council and the Minister of Housing and Local Government) as an architectural and planning consultant to prepare, for the consideration of the Corporation, detailed proposals for the planning and architectural treatment of the area around St. Paul's Cathedral.

(2) That the proposals should be submitted in the form of drawings, models, and an explanatory statement to include detailed recommendations in regard to:—

(*a*) the lay-out of buildings and roads in the area around St. Paul's Cathedral and its approaches (including Newgate-street, "The New-road," Carter-lane and Ludgate-hill);

(*b*) the architectural treatment and design of buildings within this area; and

(*c*) the preservation (or creation) of views of the Cathedral from other parts of London and factors affecting the skyline in this area.

(3) Acceptance and approval, or rejection or modification, of any proposals formulated by Sir William Holford (with due regard to the financial and other considerations involved), to remain with the Corporation, subject to the powers of the London County Council as Local Planning Authority, and subject to the approval of the Minister, in accordance with the Town and Country Planning Acts.

The main text of the report is as follows:—

Principal Modifications of the Development Plan

Apart from certain special observations which the Minister has made in relation to St. Paul's precinct, the principal modifications to the Development Plan (so far as they affect the City) are as follows:—

Route 11.—The Minister refers to Route 11 as one of the most important new road schemes in the Development Plan, and although he has approved the main portion, he considers that the eastern and western ends raise serious problems. He has, therefore, deleted the proposed principal traffic road and round-about between Old Bailey and King Edward-street and shown in place thereof a widening of Newgate-street to 90 feet on the north side.

He has also deleted that part of the principal traffic road and round-about between Camomile-street and Houndsditch and from Houndsditch to Aldgate High-street. The Minister has not made any proposals in substitution thereof, but suggests that discussions should take place with the Minister of Transport and Civil Aviation and the London County Council in order that fresh proposals can be formulated for the junction of Route 11 with Bishopsgate. These discussions are now proceeding.

Blackfriars Bridge Head and Re-aligned Upper Thames-street.—The Minister was advised by the Minister of Transport and Civil Aviation that the proposals shown in the Plan would not provide a satisfactory solution to the traffic problem at Blackfriars Bridge Head. Accordingly he has deleted the whole of this major proposal from the Plan. The Minister, however, recognises the importance of this area and has stated that it may be necessary at a later stage for the submission of proposals for alterations or additions to the Plan by way of amendment, in order to provide for a solution to the traffic problem at this point. Our Officers are now engaged in the preparation of fresh proposals, in consultation with the Ministry of Transport and Civil Aviation; meanwhile developments may have to be restricted in the area lying south of Queen Victoria-street, between Blackfriars Bridge Head and Queen-street.

London Bridge Head.—The Minister has deleted the extension of the existing Declaratory Area, together with the principal traffic round-about, designed for the improvement of London Bridge Head. He has stated that after consulting the Minister of Transport and Civil Aviation he was not satisfied, having regard to the gradients involved, that the traffic problem at this point could be solved in the manner shown in the Comprehensive Development Area Map. Discussions are now taking place with the authorities concerned and it is anticipated that a satisfactory alternative solution will be submitted to your Honourable Court in due course.

Minor Road Proposals.—When preparing the Development Plan the London County Council thought it necessary that a large number of existing streets should be indicated on the plan. The Minister, however, considers that only the principal traffic routes need be so indicated and he has, therefore, deleted a large number of minor streets from the Comprehensive Development Area Map.

General.—In addition to the foregoing, the Minister has made certain other modifications to the Plan by minor adjustments of zoning and alterations of symbols.

ST. PAUL'S PRECINCT

It will be within the recollection of your Honourable Court that the Final Report of the Consultants, Dr. Holden and Sir William Holford, included a number of recommendations with regard to the Precinct of St. Paul's and the environs of the Cathedral generally. The Consultants emphasised that, in preparing the layout of the Cathedral Precinct, they had brought a number of different factors under review. These included the desirability of opening up St. Paul's Cathedral on the south and east; the closing of the roadway of St. Paul's Churchyard to north-south traffic, while, at the same time, making provision for that traffic to flow easily from Cannon-street to Newgate-street and St. Martin's-le-Grand; the preservation of the best views of the Cathedral and its great Dome (without making an excessive demand for open space); and the maintenance and improvement of the famous prospect of the Cathedral from Bankside. The Consultants defined the natural limits of the Cathedral precincts as Paternoster-row to the North, Old Change to the East, and Carter-lane to the South. The adoption of Carter-lane as the southern boundary involved the removal of the Cathedral's Music School, now south of the Deanery, and the Consultants suggested rebuilding the school on the site adjacent to and incorporating the Church of St. Augustine in Old Change.

The open space proposed by the Consultants for the preservation of the view of the Cathedral from the south-east was created by the Corporation as a contribution to the Festival of Britain, 1951.

The treatment of the area of the Precinct (principally as open space), taken in conjunction with the re-routing of east-west traffic along a widened Carter-lane (Ludgate-hill being retained as a ceremonial approach to the Cathedral), had the effect of bringing the Deanery, the chapter House and the Music School within the Precinct. Under the Consultant's proposals these buildings, together with a low building (possibly of a commercial character), in the north-west corner of the Precinct, would be the only buildings within the Precinct, and would serve as a link between the Cathedral and the commercial City around.

The foregoing proposals were adopted by your Honourable Court; and arrangements to give effect to this new conception of the setting for St. Paul's and its immediate environs were accordingly incorporated into the Development Plan.

NEW PROPOSALS

Shortly after his appointment as Minister of Housing and Local Government, Mr. Duncan Sandys expressed himself as uneasy about the proposals for the Precinct. He was doubtful whether it was right to build on the land to the east of the Cathedral, and to site a low commercial building within the Precinct to the north of the Cathedral. The Minister indicated to us that he intended to delete from the Development Plan, all proposals for building within the Precinct with a view to the whole matter being reconsidered in conjunction with the redevelopment of the area between Paternoster-row and Newgate-street. Accordingly, in the Development Plan, as approved by the Minister, the whole area between Paternoster-row on the north, the "new road" (linking Cannon-street with "St. Paul's-place") on the east, Carter-lane on the south, and Ave Maria-lane, Creed-lane and the Deanery on the west, has been re-zoned merely as "St. Paul's Precinct."

In the letter which the Minister has recently addressed to the Chairman of the London County Council Town Planning

Committee on the subject of the modifications which he had made to the Development Plan, Mr. Duncan Sandys included the following paragraph:—

> "There is one area to which I have given very special attention, and that is the area in the City around St. Paul's. On examining the detailed plans and models of the proposed scheme, I could not help feeling that a unique opportunity was being missed to provide a truly worthy setting for Wren's world-famous cathedral. I am now in course of discussing this matter with representatives of your Council and of the Corporation. Meanwhile, I have had your Plan modified in such a way as not to preclude any changes in the treatment of this area which may be decided upon."

We had, of course, given very careful consideration to the views of the Minister prior to the recent public announcement of his decision on the Development Plan. We recognised that the immediate environs of the Cathedral constitute an area which calls for special attention in the replanning of the City; and we came to the conclusion that an Architect of outstanding eminence should be commissioned to prepare a detailed scheme for the creation of a St. Paul's Precinct which would provide the Cathedral with a setting worthy of its unique position as one of the Nation's most valuable heritages. We were reinforced in this view by the conviction that only by such a method would a proposal eventually emerge which was likely to commend itself, not only to the public generally, but also to the many Authorities (including the Minister of Housing and Local Government) who have an interest in a part of the City where planning proposals are likely to be subjected to a considerable measure of national scrutiny and appraisal.

At this stage in our report we would like to inform your Honourable Court that the arrangements under which, for the past seven years, the services of Dr. C. H. Holden, Lit.D, FRIBA, MTPI, and Sir William Holford, MA, FRIBA, MTPI, have been retained as our consultants, terminated on January 31, 1955. In the light of the recommendations set out above, we do not propose to extend the arrangement; and we are giving careful consideration to the question of the means by which the Corporation will, in future, receive advice on architectural and town planning matters. We anticipate that a report on this matter will be submitted to your Honourable Court by the Officers and Clerks Committee at an early date. Meanwhile, we have come to the conclusion that Sir William Holford should be asked to undertake the preparation of the special scheme outlined above for the creation of the new St. Paul's Precinct. We would add that Dr. Holden is already acting in an advisory capacity on behalf of the Dean and Chapter of the Cathedral, and will therefore continue to remain in close collaboration with Sir William Holford in the event of your Honourable Court approving our recommendations.

MINISTER'S APPROVAL OBTAINED

With these considerations in mind we appointed our Chairman and late Chairman to confer with the Minister of Housing and Local Government and to convey to him our suggestions on the matter. They stressed the view that the Corporation's appointment of Sir William Holford should be made with the full knowledge and consent not only of the Local Planning Authority but also of the Minister. The Minister expressed his gratification and approval of our proposal.

It is intended that the scheme, which will be accompanied by drawings and model, and an explanatory statement, should include detailed recommendations in regard to:—

(*a*) The layout of buildings and roads in the area around St. Paul's Cathedral and its approaches (including Newgate-street, "The New Road," Carter-lane and Ludgate-hill).

(*b*) The architectural treatment and design of buildings within this area; and

(*c*) The preservation (or creation) of views of the Cathedral from other parts of London and factors affecting the skyline in this area.

LIAISON WITH CONSULTANT

The Minister has suggested the appointment of a committee consisting of himself (or his representative), and the Chairman of the Improvements and Town Planning Committee and of the London County Council Town Planning Committee (or their representatives) in order to maintain contact with Sir William Holford during the preparation of his proposals, and to give him guidance as to the general principles to which he should have regard. The London County Council are in agreement with these suggestions.

In the discussions with the Minister, our Chairman and the late Chairman emphasised that complete freedom with regard to the acceptance and approval, rejection or modification of any proposals formulated by Sir William Holford (with due regard to the financial and other considerations involved), will remain with the corporation, subject to the powers of the London County Council as Local Planning Authority, and subject to the approval of the Minister, in accordance with the Town and Country Planning

D. H. LAWRENCE MEMORIAL HALL.—A perspective of the proposed D. H. Lawrence Memorial Hall for the Eastwood UDC, which would be sited in relation to a possible future Community and Civic Centre. The main hall, to seat 600, is rectangular, and measures 100 ft. by 65 ft., and there is also a large entrance foyer, 80 ft. by 30 ft. Because of the possibility of mining subsidence, it is proposed that monolithic principles of construction should be adopted up to concert hall level. The architects for the scheme, Messrs. Cecil Howitt and Partners, F/AA.RIBA, suggest that, having regard to the fact that contributions to the hall might be made internationally, a special sculptured group should be introduced in a prominent position in the forecourt, as shown in the illustration. No estimate of the cost of the hall has yet been announced.

Acts. This reservation has been accepted by the Minister.

Contemporaneously with the discussions which have been proceeding with the Minister, we have been in communication with Sir William Holford and are glad to be able to inform your Honourable Court that he has intimated that he will be honoured to undertake the preparation of a scheme on the lines indicated.

It will be evident to the members of your Honourable Court that the question of the treatment of the area around St. Paul's Cathedral is a matter to which both we and the Minister of Housing and Local Government have given special and urgent consideration in the past few months. In our view, the suggestion which we have made to the Minister, which has been most cordially accepted by him, represents the best method of ensuring that the environs of the Cathedral are redeveloped in a manner which will receive widespread public support; and will accord to Wren's masterpiece a treatment worthy of its especial place in the hearts and minds of all English-speaking peoples.

The report recommended that Sir William Holford be paid a fee of 10,000 gns. for the preparation of the scheme.

POST-WAR SCHOOL DESIGN

Effects upon Building Constructional Methods and Costs

A LECTURE on " The Effect of Post-war School Design upon Building Constructional Methods and Costs " was given by MR. S. A. W. JOHNSON-MARSHALL, BArch., ARIBA, Chief Architect, Ministry of Education, at a meeting of the Institute of Builders held at 48, Bedford-square, WC1, on March 23. Mr. P. Gilbert, OBE, FIOB, was in the chair.

Mr. Johnson-Marshall emphasised that he wished to speak personally, and not as an architect from the Ministry of Education. He said he was not going to give them a lecture on prefabrication. He wanted to run briefly through the history of the work which some of them had been engaged in since 1946 and to try and point out some of the problems that had emerged—problems which had not yet been solved, he thought, and problems many of which were common not only to prefabrication, but also to conventional building. By prefabrication he did not mean the kind of thing that had developed for housing, but the concept of standardisation which comprised a standardised kit of parts which could be assembled in an infinite number of ways to build buildings of many sizes and of many kinds. It was also of good quality and was in no sense a makeshift. In fact, they had used the words " Meccano set," and he thought this was not inappropriate as a term.

The speaker then went on to describe earlier work with Hertfordshire County Council on prefabricated schemes. He also showed his audience a copy of a productivity chart which will shortly be published in a bulletin on productivity; it was, he said, set in terms of interest to the client, not mainly in terms of interest " to you or to me." The productivity was measured in terms of output in square feet per man month, and they thought that that was a much better way of measuring productivity than cost. The chart aimed to show that prefabrication had done what it was intended to do, and no more than that.

WORK AT THE MINISTRY

Mr. Johnson-Marshall continued: I am turning now to 1950; our development work was started at the Ministry in that year. In the main it was a continuation of the same kind of work that was done in the early days in Hertfordshire, but there is one big difference and that is that the Ministry of Education is not and never will be responsible for building schools as such. That, of course, gives us a great advantage in that, as architects, we can concentrate exclusively on development work. By " development work " I mean the widest sense of the term; I do not only mean the devising of new forms of construction.

In 1950 the conditions which induced Hertfordshire to develop a meccano set were still governing school building in many parts of the country; in fact, in most parts of the country where the majority of schools were needed. Those conditions were a desperate need of school places and an acute labour shortage, particularly of bricklayers, plasterers and carpenters. Broadly speaking, in 1950 there were only two fully-fledged meccano sets available to local education authorities and more seemed to be needed; in fact, I think they were essential.

A Select Committee in 1952, I think it was, went as far as to say that unless 50 per cent. of the schools were prefabricated, then the whole school building programme would break down. I think that was an exaggeration myself, but it does indicate an impartial view of the whole thing. Therefore, the Ministry of Education has tried to encourage the development of more systems, but, before doing so, we tried to take stock and see how we could improve on the past.

ENCOURAGING COMPETITION

We have tried to spread the load over different supporting industries and to get competition between them. I should like to hear your views about competition. Our views are, first, that there are a great many kinds of competition, and when it is talked about lay people very often think of it only in its narrow sense; and, secondly, we already have a system of developing steel frames clad in stone-faced concrete slabs and we had aluminium, and to these have since been added a system with a cold rolled steel frame and a pre-stressed concrete system, both of which we have helped to design. Finally, there has been the introduction of several good systems in timber (which, I think, were extremely good bits of work) which we have encouraged but with which we have had no intimate connection.

But, not the least important, we have tried to bring the builder in at the earliest stages of design of the system which we have worked upon, and in one case he reacted so well that he actually sponsored the system.

Well, just to sum up, prefabrication of the meccano set kind has been going on for about eight years; and what of the future? Well, the educational programme is still running at between £40 and £50 m. a year and your guess is as good as mine, but it looks as though it will go on doing so. There is still an enormous need for quicker building and there are still areas where the shortage of manpower looks as if it is not likely to improve. To us some of the factors seem to be mainly those of organisation; no longer is it perhaps the most important job to concentrate on ordering material and taking on craftsmen, but rather is it more important to organise teams of highly specialised sub-contractors.

If we divide the work that the builder does on these jobs into three phases, as some of our builder friends have done, we see that they seem to make a profit on the foundations of the site work, and they seem to find they can make a profit on the erection of the shell also, but, in organising sub-contractors, I do believe them when they say they lose quite a lot of the profit. There seem to be several alternatives for the builder to adopt: one is to take over more of the work as he inevitably does if he is the sponsor of the system. As the sponsor of the system we reckon that he handles roughly 80 per cent. of the turnover instead of only handling something like 40 per cent. But when he is the sponsor of the system as well as the builder of the building I think his work, in a way, is beginning to get back to being very similar to conventional building, in that he is the assembler of parts, but the parts are now four or five times as big. They vary in weight and, of course, they are mainly assembled dry instead of wet.

BRINGING IN THE BUILDER

There was a second alternative, and that seemed to us to be an attempt for the builders as a whole to get a closer tie-up with sub-contractors, and we thought that perhaps that is the kind of job which an Institute of this kind might be interested in. But, to get back to the point I am most interested in myself, if the builder is going to make more efficient use of his organisation for this type of building (or, in my view, for any other) he needs to be in at the design stage of the job, and, as an architect, I would be very much happier if he were, no matter how we (or should I say he) were building it. And perhaps more important from the point of view of economy he needs to be able to see a continuing programme of work.

If it pays the builder to have continuity and a programme, and if the insistence on competitive tendering is stopping it, then I think it is up to us—and particularly up to you— to devise an alternative means of demonstrating to the clients, who are responsible for public money, that they are getting value for that money.

General view of schools from south. Below: Main entrance to junior school.

Westfield Primary Schools, Workington, for Cumberland CC

County Architect
JOHN H. HAUGHAN, FRIBA

Assistant Architect-in-Charge
A. L. PILKINGTON

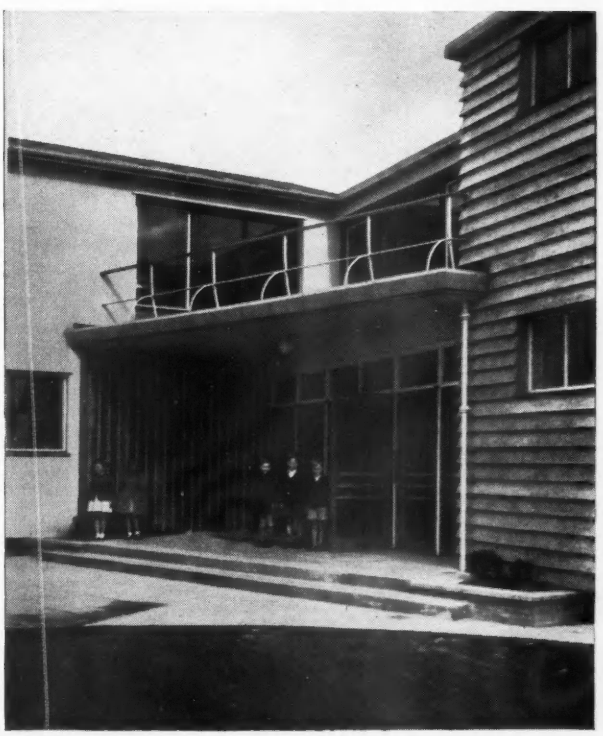
Quantity Surveyors
E. THORNELY & PARTNERS

Builders
J. LAING & SON, LTD.

THERE are two schools in this scheme, one for juniors and another for infants, and they are situated in the midst of the rapidly expanding Westfield Housing Estate. The five-and-three-quarter-acre site, which has a slight fall from north-east to south-west, is bounded on the north-east side by the Workington to Cleator railway. The land on the south side of the site is reserved for a secondary modern school.

The keynotes of the whole design are scale, informality and attractiveness. The schools have been designed as two separate units so as to avoid a large monumental building which would tend to be too impressive and possibly overawe the young child. These smaller units which have attractive, friendly exteriors, are much more in scale with the minds of children. The broken mass of the two-storey junior school, with the single-storey infants' school close by, harmonises both in appearance and scale extremely well with the surrounding houses.

The junior school is planned in the form of a cross, the four classrooms being at the shorter arms with the entrance hall in the centre, while the assembly hall is at the end



of the long arm with the administrative offices acting as a sound buffer between the hall and classrooms. Five classrooms are grouped around the crush hall and staircase on the first floor. This shape of plan has reduced corridor space to a minimum and saved considerably in the overall cost of the building.

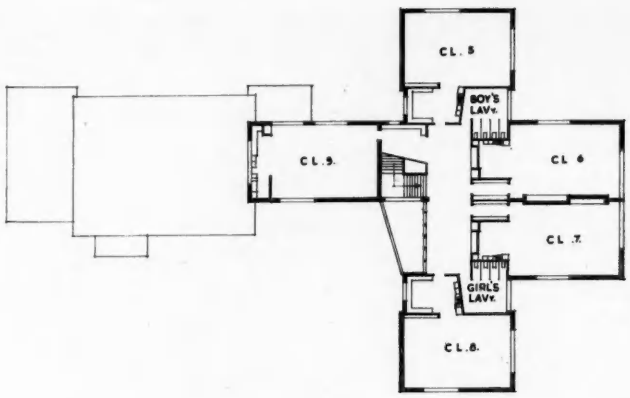
The Ministry of Education Building Bulletin No. 1 gives the reasonably economical allocation of space to the hall and classrooms as 41 per cent., whereas by employing this type of plan arrangement 62 per cent. of the school is occupied by these rooms.

A novel and most useful feature of this school is that each classroom has a large recess attached which contains shelves, a sink, and two lavatory basins. In four cases the cloakrooms are incorporated in the recess while the remaining cloakrooms are situated immediately outside their respective classrooms. This system of planning assures direct supervision by the teachers of all cloakrooms and lavatory basins; it also results in the elimination of separate storerooms for each class, much of the space normally occupied by the store being available as a teaching area.

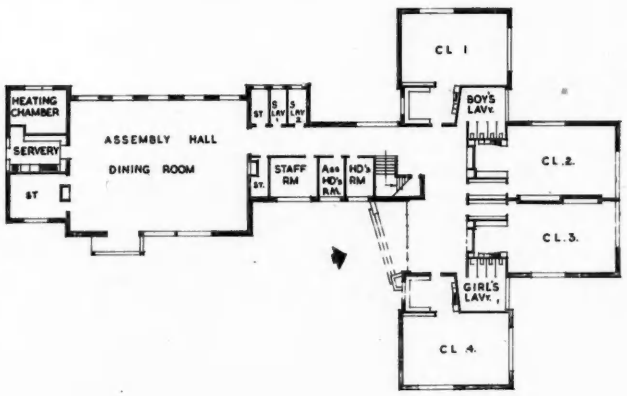
The infants' school has been arranged with the assembly hall as the focal point, the classrooms opening off a corridor on the south side of the hall. Each classroom has a working recess as in the junior school, but in this case there is a sanitary room containing two w.c.s and a urinal stall opening off the recess. This allows the teacher to have complete supervision of the class the whole time the children are in the school.

Doors at the rear of the junior school give access to two paved areas; the smaller of these two areas is adjacent to the assembly hall and in suitable weather can be used for gymnastic purposes. The infants' playing area is in close proximity to the school entrance and at one end there is a sand pit for the use of the children.

Construction.—Generally, the walls are of load-bearing brickwork with floors of prestressed concrete beams. Steel beams have only been used over long stretches of windows except in the case of the two assembly halls which, because of the wide span, are steel-framed. The external cavity brick walls are rendered in coloured Stonite. All the classroom blocks, the infants' assembly hall and canteen kitchen have been roofed with low pitched copper-covered roofs, the copper sheeting being laid on 1 in. insulation board. The sanitary rooms, which are constructed of concrete blocks with a weathered face, and the junior assembly hall are covered with flat roofs.

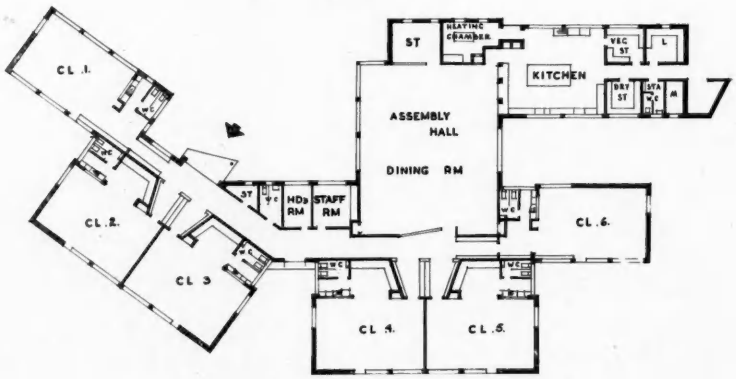


FIRST FLOOR PLAN



GROUND FLOOR PLAN

Plans of junior school.



GROUND FLOOR PLAN

Plan of infants' school.

Gas-fired boilers are used for heating the schools. The heating installation is by thermostatically controlled low-pressure hot water which feeds convector type warm air blowers in all large rooms; radiators are used only in a few isolated cases. The hot water installation is by gas-operated storage heaters, generally, four lavatory basins being connected to one heater.

Building operations began in March, 1953 and were completed in August, 1954. The cost was approximately £86,217. Following is a list of the sub-contractors and suppliers:

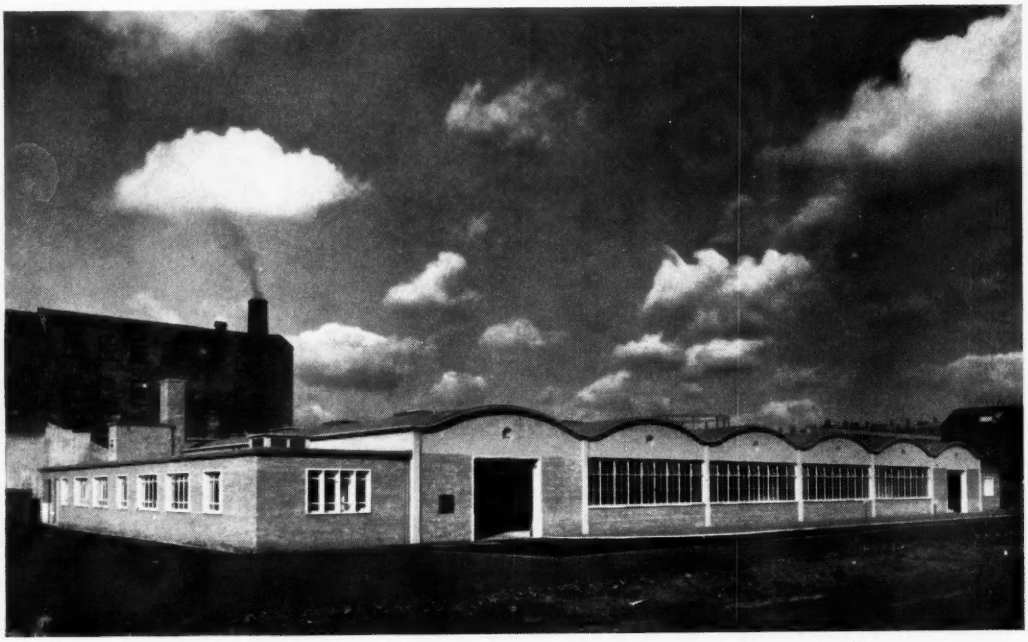
Copper roofing, insulation, trusses and spars, Broderick Insulated Structures, Ltd., Woking, Surrey; heating, hot water and gas installation, David Thomson and Sons, Ltd., Carlisle; metal windows, doors and roof lights, Henry Hope and Sons, Ltd., Smethwick; precast concrete floor and roof slabs, Concrete, Ltd., Leeds; structural steel, Donald Clerk and Son, Ltd., Rutherglen by Glasgow; electric services, North Western Electricity Board, Workington; floor tiles, Hollis Bros., Ltd., Hull; tar macadam pavings, Constable Hart and Co., Ltd., Derby; sanitary fittings, Shanks and Co., Ltd., Newcastle upon Tyne; asphalt roofing, Permanite, Ltd., Birmingham.

Interior of a junior school classroom.

Wood strip floors, J. A. Hewitson and Co., Ltd., Hull; ironmongery, roller shutters and kitchen canopy, N. F. Ramsey and Co., Ltd., Newcastle upon Tyne; insulating board ceilings, Anderson Construction Co., and Gibson, Ltd., Leeds; balustrades and handrails, Nettlefold and Moser, Ltd.; w.c. partitions, Venesta, Ltd.; cloakroom fittings, James Gibbons, Ltd., Wolverhampton; slate window cills, John Fletcher and Dixons, Ltd., Caernarvon; concrete floor tiles, Langley (London), Ltd.; entrance gates, James Bendall and Sons, Ltd., Carlisle, Cumberland.

WESTFIELD PRIMARY SCHOOLS, WORKINGTON, FOR CUMBERLAND CC

Interior of infants' assembly hall from main entrance corridor.



View from south-east. Below: Interior view.

CENTRAL AMBULANCE STATION, SAXTON LANE, LEEDS

Leeds City Architect
R. A. H. LIVETT, OBE, ARIBA

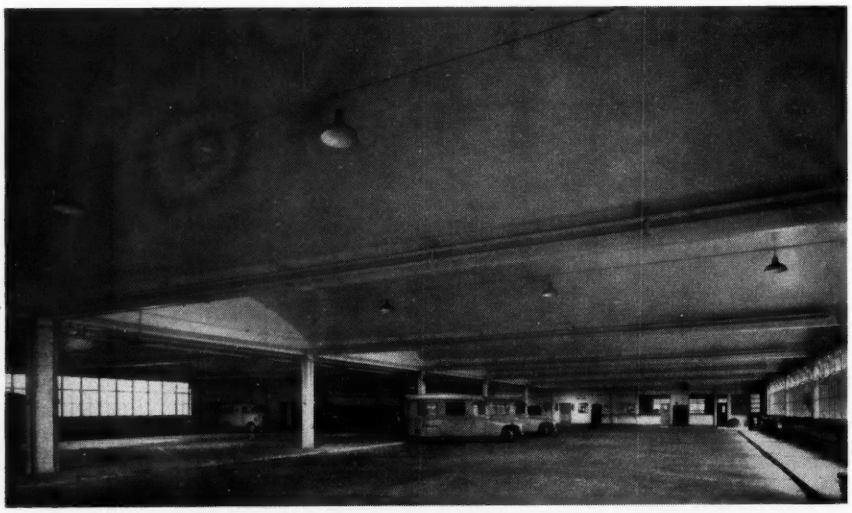
Chief Assistant Architect
E. L. MYERS, ARIBA

Builders
PICKARD & CO.

THE ambulance station is sited near the centre of the City of Leeds, housing over 50 ambulance cars and other ambulance service vehicles and is the central control point for the ambulance service in Leeds and District.

The plan consists of an ambulance hall 190 ft. by 116 ft. in which are parked the vehicles, an entrance door and exit door respectively being placed at either ends of the east wall to provide one way vehicular circulation.

Grouped off the northern end of the ambulance hall is the administration annexe consisting of wireless control room, offices and stores, etc., while at the southern end of the hall is placed the maintenance



annexe consisting of workshop stores, pits, washing bays, petrol and oil stores distribution, and boiler room, etc. Grouped off part of the western side of the hall is the staff annexe consisting of common rooms, canteen, kitchen and lavatories and cloaks accommodation.

A clear height of 12 ft. is provided to the ambulance hall, while the height of the rooms of the administration, maintenance and staff annexes is 10 ft. 8 in. The area of the whole building, including all annexes, is approximately 29,113 sq. ft.

Construction.—The structure, which is erected over an area consisting of the basements of houses demolished under a slum clearance programme, is of an *in-situ* reinforced concrete framework and foundations and employs over the ambulance hall a reinforced concrete barrel vault shell roof of the Chisarc and Shell " D " system, enabling the number of columns to be reduced to such a minimum as to provide an uninterrupted passage for the ambulance vehicles through the ambulance hall. Reinforced concrete flat roofs are placed over the administration, maintenance and staff annexes, all surfaces of the concrete being left smooth to receive paint, etc.

The walls between the reinforced concrete framework consist of brickwork and glazing, the east and west walls of the ambulance hall being given a maximum of glazing to ensure, along with concrete roof lights, good natural lighting over the the whole of the floor area. Windows generally are of metal frames set in precast stone surrounds.

Finishes.—Walls of the ambulance hall and maintenance annexe are finished in fair faced brickwork, and these, together with the reinforced concrete columns and the underside of the barrel vault roof, are painted with a semi-gloss plastic paint. The walls and ceilings of the administration and staff annexes are finished in hardwall plaster and painted semi-gloss plastic paint. All woodwork and ironwork, etc., generally is finished with gloss enamel paint.

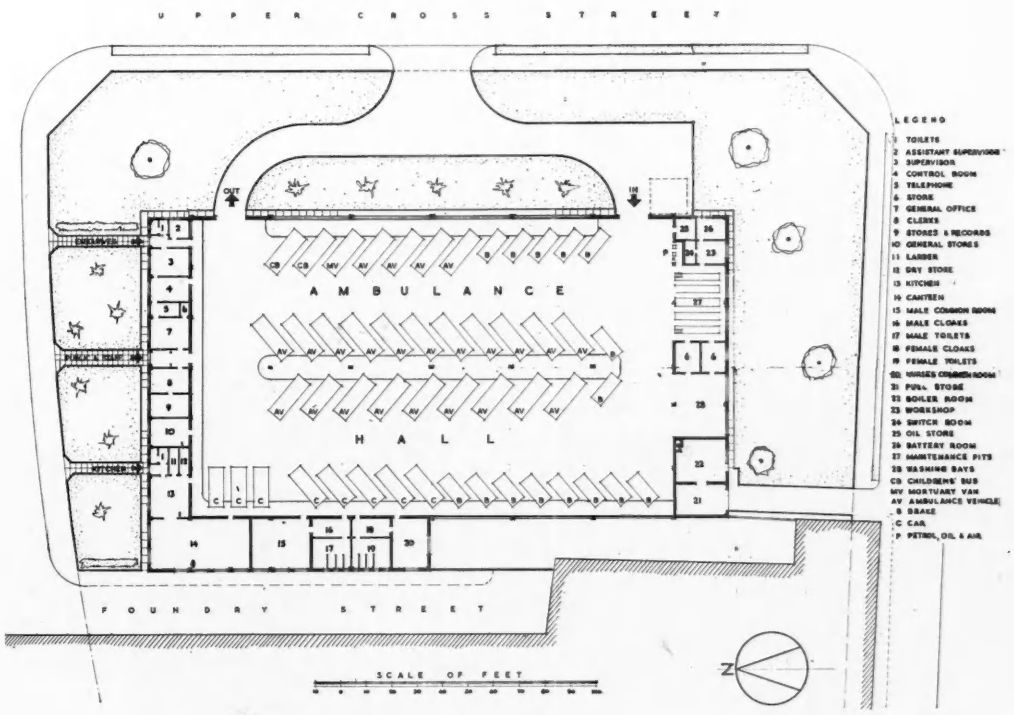
The floors of the ambulance hall and maintenance annexe are of granolithic finish treated with hardening admixture. The floors of the administration and staff annexes are finished with thermoplastic tiles and skirting, except the kitchen which is finished with quarry tiles. The upper surface of the barrel vault roof and the flat roofs are finished with a vermiculite screed and mineral surfaced roofing felt.

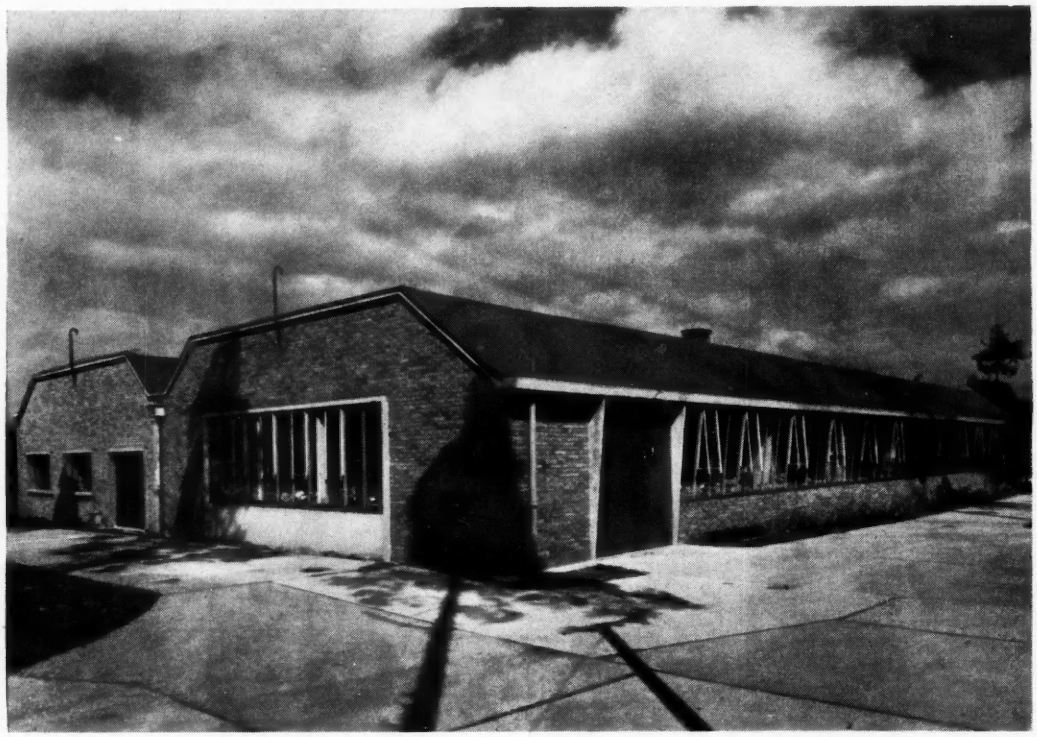
Services.—Space heating is by accelerated hot water central heating systems, with separate circuits to the ambulance hall and administration annexes, etc. The ambulance hall has pipe coils at high level, and the annexes have pipes and radiators. Hot water is provided by instantaneous heaters placed near the lavatory blocks and kitchen, respectively, and other lavatory basins.

In addition to the usual electrical installation for normal mains voltage lighting, etc., a low voltage installation is employed for power tools in the maintenance annexe and through overhead lines placed over two centrally parked rows of vehicles for any minor work which may be required in connection with the parked vehicles. The contract price was £55,000. Following is a list of sub-contractors :—

Reinforced concrete, Holst and Co., Leeds ; thermoplastic floor tiles, Marley Tile Co. ; quarry tiles, A. Andrews and Son ; heating and ventilation, Modern Heating (Button), Ltd. ; electrical work, Allenby and Stokell, Ltd. ; gas installation, North-Eastern Gas Board ; paint (plastic), Vitretex (England), Ltd. ; (enamel), Donald Macpherson and Co., Ltd. ; concrete hardener, Sealocrete Products, Ltd.

CENTRAL AMBULANCE STATION, SAXTON LANE, LEEDS



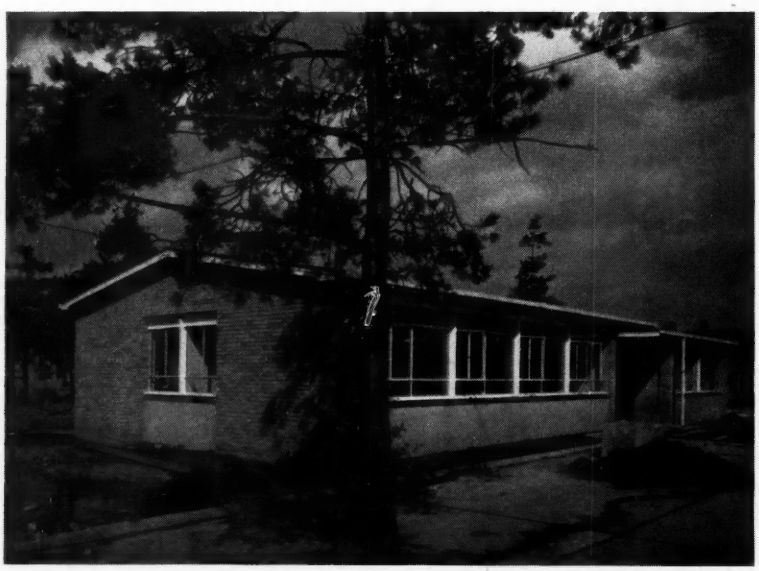


General view of factory building. Below : The office block.

FACTORY FOR LIGHT INDUSTRY AT SHEERWATER, WOKING

Architect
CLIVE PASCALL, FRIBA

Builders
R. HOLFORD & CO., LTD. (first stage) W. H. GAZE & SONS, LTD. (second stage and office block.)



THE production unit in this scheme was designed as an extendible open area factory for work of a light industrial nature, comprising the assembly of electrical switches, etc., including some light metal pressings. The work is carried out mainly on long benches, the open plan and roof lighting allowing for complete freedom of bench layout.

The necessary cubic content in relation to the number of employees is maintained throughout the main factory area, but in the end bays reinforced concrete floors were introduced over lavatories, etc., at a height of 8 ft. floor to ceiling, which then resulted in additional storage areas at high level.

In the office block circulation space was kept to a minimum by the intercommunication of the more personal offices, i.e., directors, secretary and board room.

Site and site plan.—The site is a corner plot on the edge of the industrial estate adjoining the LCC Sheerwater housing estate. It is almost level, but the siting of buildings was restricted by a 30 ft. building line on all but one side. Care was taken to use existing trees to the best advantage to form a partial screen to the pavement where it passes close to the board room windows of the office block.

The office block is sited in such a way that the occupants of the main offices have no sight of the factory elevation.

Construction (*Factory*).—Precast reinforced concrete frame and roof units; 11 in. cavity external walls; Leicester hand-made golden facings externally and all internal brickwork fair faced buff sandlimes; 1½ in. vermiculite screed over roof units covered with three layers roofing felt, top layer green mineral-surfaced; patent glazing, both roof and vertical, of aluminium burglar proof pattern; roof glazing ⅜ in. plyglass for heat insulation and light diffusion, remainder clear sheet glass; floor reinforced with BRC fabric due to patches of low load-bearing soil.

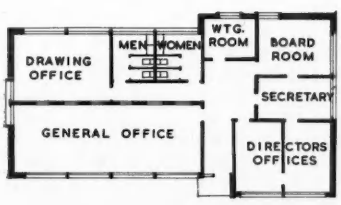
(*Office block*).—A similar impression of structure posts supporting the roof was obtained by the use of large timber sections with a continuous beam over. The roof is of timber joists spanning from beams to spine 4½ in. wall, supporting Stramit boards covered with roofing felt to match factory. External walls showing facing bricks, 11 in. cavity. Infill panels 9 in. common brickwork rendered with coloured cement. All internal walls 4½ in. brickwork supporting roof.

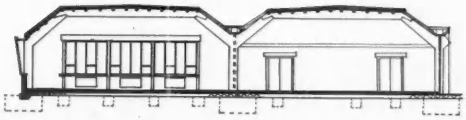
Elevational treatment (*Factory*).—The uninterrupted use of vertical patent glazing by-passing the structural reinforced concrete posts resulted in a pleasant horizontal effect, producing a low clean line. The absence of large expanses of brickwork created a lightness echoing the use of the factory.

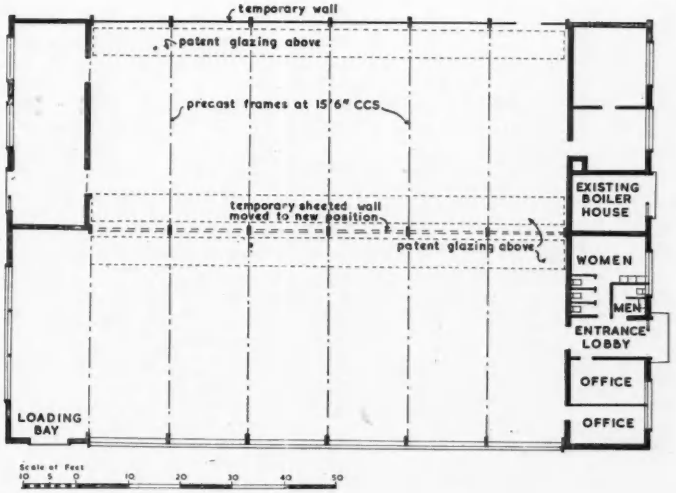
(*Office block.*)—It was desirable to maintain the atmosphere of the factory while at the same time keeping the scale of the building semi-domestic, as is typical of an office block. This was obtained by the use of metal casements between the structural timber posts, thereby giving more human proportions to the elevations.

Services.—The factory and office block are served by an oilfired hot-water boiler positioned in the factory. Heating is by radiators and high- and low-level coils. Domestic hot water is supplied by electric storage heaters. Both buildings are illuminated by fluorescent lighting. Costs worked out at: factory, 2s. 9d. per cu. ft.; office block, 4s. 5d. per cu. ft. Following is a list of sub-contractors:

Reinforced concrete, London Ferro-Concrete Co., Ltd.; electrical, Bell Bros. and Co. (London), Ltd.; heating, J. Wontner-Smith Gray and Co., Ltd.; patent glazing, Faulkner, Greene and Co., Ltd.; roofing, Engert and Rolfe, Ltd., and Excel Asphalte Co., Ltd.; metal windows, Guildford Glass and Metal Works, Ltd., and Brunswick Metal Casement and Engineering Co., Ltd.; window surrounds, Enfield Stone Co., Ltd.; part factory floor, Plastona, Ltd.; office floor, Armstrong Cork Co., Ltd.; ironmongery, W. N. Froy and Sons, Ltd., and Comyn Ching and Co. (London), Ltd.; sanitary ware, John Bolding and Sons, Ltd.; w.c. partitions, Flexo Plywood Industries, Ltd.; fencing, Penfold Fencing and Engineering, Ltd..







Plan of office block. Right: Plan and cross section of factory.

FACTORY FOR LIGHT INDUSTRY AT SHEERWATER, WOKING

STUDENTS' SURVEY

Replanning West Bethnal Green

AT a meeting at the Housing Centre on March 15 students of the Town Planning Department, University College, London University, who work under Professor Sir William Holford, described the survey they have made of West Bethnal Green and their proposals for its redevelopment, the whole scheme to be completed by about the year 2000. The survey and plan have been undertaken as part of their work for the diploma in town planning. Sir William Holford presided.

It is proposed that the development shall be carried out in three phases, one to occupy five years from the present day, the next to take another 15 years and the final stage a further 25 years.

The area covered by the survey is defined by the line of the Hackney-road on the north and north-west, the main railway line from Liverpool Street on the south and Ruby-lane—Globe-road on the east. This area, amounting to 370 acres, forms about half the borough and contains three-fifths of its population.

The students stated that an overspill of 10,000 people during redevelopment must be accepted in order to plan the area satisfactorily. This resulted from a decision to limit the net density of the residential areas to an overall figure of 150 persons per acre and the provision of the space necessary for industry, shopping and other uses, together with open space within the residential area equivalent to about 2¾ acres per 1,000 persons.

The principal road framework should enable the through traffic to be taken away from the residential areas. To this end the following road proposals were necessary: Hackney-road to become a fast motor road and to be realigned at its eastern end, connecting central London with the existing arterial road to the east. Cambridge Heath-road to lose its function as a through north-south route, which tends to divide West Bethnal Green from its civic centre. To cater for the displaced traffic a new north-south road to be sited approximately on the line of Globe-road. Bethnal Green-road to be realigned at its western end, in order not to offer a direct route for external traffic. This road would remain as the principal internal road linking east and west Bethnal Green to each other and to the civic centre.

GROUP PLANNING

The plan, stated the students, provided several point-blocks, placed to punctuate the layout and set in substantial open spaces. Houses, flats, and maisonettes were planned as groups as far as possible, with varied use of closes, squares, terraces, flats and point-blocks. An increased demand for garages had been provided for.

For industrial use approximately 40 acres were to be allocated, but it was expected that this would be insufficient unless some of the larger industrial concerns moved out of the area. The traditional local industries of clothing and joinery were to be reorganised and their plant and buildings brought up to date within the new zone, into which they would gradually move. Some service industries were to be situated just north of the industrial road.

The main shopping centre was proposed to be sited along part of Bethnal Green-road, with a "piazza" for pedestrians leading from the road at the north of the precinct and a similar open area around St. Matthew's Church to the south. Chief reasons for this siting were given as the fact that the traditional shopping area was along the Bethnal Green-road; the advantages of a shopping piazza away from noise, fumes and danger of traffic; linking of the shopping centre to the north with the open space pattern; proximity to the main entrance to the area; and the diversion of heavy traffic from Bethnal Green-road, which would thus become more "intimate."

Fronting on to the road with parking space to the rear 120 shops were to be provided, also two cinemas, a health centre, offices and a branch library. The plan also envisaged four other shopping centres, each containing 20 to 30 shops, in various parts of the area, to serve the day-to-day needs of the people. It was also suggested that the existing "Sunday market" should be located along the new industrial road.

In the plan the existing civic centre at Cambridge Heath-road was to be retained forming the focus for additional public buildings, but there would be some resiting of existing buildings to conform to the new open space link with the rest of the area.

St. John's, St. Leonard's, St. Matthew's and St. Peter's Churches were to be retained. It had been thought important to keep the idea of small places of assembly throughout the residential areas, with the addition of branch libraries at the shopping points. A new fire station was to be located near the hospital and the latter to be rebuilt approximately on the same site. In addition to nursery schools as required inside the residential groups, five new primary schools and three secondary schools were proposed.

Taking Victoria Park into consideration, a basis of 2¾ acres of open space per 1,000 of population was suggested. The form would be a large number of small spaces making a network throughout the area, leading to the formal open space fronting the civic centre.

As well as the main road proposals already stated, there would be a new road running from a point near Bishopsgate Goods Station eastwards parallel with the railway and connecting with the new north-south road by means of a "T" junction. This road was designed to remove all but purely local traffic from Bethnal Green-road and to serve the industrial area. The internal pattern of roads would be a loop system comprising Bethnal Green-road, Cambridge Heath-road, Old Bethnal Green-road and a new linking road to the west. From this loop, service roads would be taken to the various groups of buildings.

The students found that the residential property was divided into four age groups: before 1870, between 1870 and 1916, between 1916 and 1945, and those built since. Well over half the dwellings were built before 1870 and were almost entirely of the two-storey terrace type. From 1916 to 1945 residential development had been almost wholly in the form of multi-storey flats, the only houses built during the immediately post-war years being a terrace.

REBUILDING OF WELLINGTON BARRACKS

Proposal to Rebuild to Plans by War Office Architects

SIR ALFRED BOSSOM, Bt, MP, FRIBA, has raised with the Secretary of State for War (Mr. Antony Head, PC, MP), the matter of the rebuilding of Wellington Barracks, Birdcage Walk, which (as announced in *The Builder* of February 18) are to be rebuilt in the near future. In his letter Sir Alfred drew the attention of the Minister to the fact that plans for rebuilding had been prepared just before the outbreak of war in 1939 by Mr. Arthur Kenyon, CBE, FRIBA, and approved by the Royal Fine Art Commission.

In his reply, dated March 16, Mr. Head writes:

"You wrote to me on February 21 about the rebuilding of Wellington Barracks and the fact that this will not now be based on the original designs produced in 1939 by Mr. Arthur Kenyon.

"The reason for this situation is that with the lapse of time a completely different scheme is needed and the pre-war designs no longer meet our needs.

"The 1939 plans were designed for the housing of two battalions of the Guards at their pre-war strength. When decisions were taken after the war about the future housing of the Army in this country the Army Council eventually decided in 1951 that only one battalion should be housed in Wellington Barracks. One factor in reaching this decision was that owing to improvements in the scale of accommodation, particularly in the men's sleeping accommodation, the provision of a club, and improved washing facilities, further storeys would have had to be added to get the necessary floor area.

"You will realise that Mr. Kenyon's design, which was for two balanced wings each housing a battalion with separate Sergeants' Messes, could not be adopted or even adapted to meet the changed needs.

"As to the new plans, these are being prepared by the War Office architectural staff under the personal direction of Mr. C. A. Richards, the Superintending Architect. The designs, when prepared, will have to go before the Fine Arts Commission and also be approved by the Ministry of Works. At present they are still in their very early stages."

(Signed) ANTONY HEAD.

News of the Week

NEW HOMES FOR OLD

"MODERNISATION of Obsolescent Dwellings" is the title of a course to be held at St. Mary's Hotel, York, from April 14 to 20. It is intended primarily for practising architects, surveyors, clerks of works, builders and property managers.

The outline syllabus includes town-planning aspects of the problem; modernisation of historic buildings; general principles of conversion; grants and loans; property management; timber decay and preservation; examples of recent work in this country and abroad and visits to recently modernised buildings in the York area.

The lecturers will include Mr. H. F. Clark, FILA, lecturer in landscape design, Reading University; Dr. T. Howarth, ARIBA, senior lecturer in architecture, Manchester University; Mr. J. Jowett, Timber Development Association; Mr. F. W. Ledgar, MA, AMTPI, lecturer in town planning, Manchester University and Mr. F. Walter, FRIBA.

This course is the ninth of a series of specialised courses on the protection and repair of historic buildings arranged by the York Institute of Architectural Study. A public exhibition on the modernisation of obsolescent dwellings has also been arranged in the York Public Library by the Institute, to run concurrently with the course. Both the exhibition and the course will be opened on April 14 by Mr. Max Tetlow, ARIBA, MTPI, Regional Officer, Ministry of Housing and Local Government.

Application forms and further information can be obtained from the Secretary, York Institute of Architectural Study, St. Anthony's Hall, York.

REPAIR OF BATH'S BUILDINGS

A SPECIAL advisory committee at Bath has been set up to advise the Historic Buildings Council for England and the Bath Corporation on a programme of repairs to the city's terraces which are of outstanding architectural interest. The members of the committee are:—

Aldermen Berry, Day and Taylor, Councillor Biggs—representing Bath Corporation; Mr. R. R Henshaw, Mr. G. E. Hughes—representing Bath Preservation Trust; The Earl of Euston, Mr. John Summerson — representing Historic Buildings Council for England; Lord Methuen, Sir Orme Sargent—independent members nominated by the Minister of Works.

The committee held its first meeting on March 17. Alderman Berry has been elected chairman, Lord Euston deputy chairman and Mr. Jared Dixon, Town Clerk of Bath, is the honorary secretary.

The cost of the programme of repairs to the terraces will be met by contributions from owners, by grants from the Bath Corporation and by grants from the Ministry of Works. Among the subjects which the committee is considering is the most suitable method for restoring the stone façades of terraces such as The Circus.

DEVELOPMENT PLANS

THE Minister of Housing and Local Government has issued a circular (No. 9/55) to local planning authorities giving advice on the first review of their development plans and setting out what fresh material he would like to have submitted to him on this occasion.

This review is due to take place five years after the approval of each individual plan; it was one of the provisions of the Town and Country Planning Act, 1947, which aimed at making development plans less rigid than the older planning schemes.

The Minister does not consider that the plans should be extended on the occasion of this review; he advises rather that authorities should take the opportunity to concentrate in detail on problems of particular difficulty in their area and on subjects which they were not able to tackle fully on the first submission of the plan.

He suggests that the submission should be a fairly short and workmanlike document reviewing the plan in the light of experience over the first five years, and drawing on that experience. Advice is given against the making of too many minor and meticulous amendments to the approved plans.

A particular problem to which the Minister has drawn attention is that of the overspill of population from one area to another, and he has asked for information which will enable development plans for "exporting" and "receiving" authorities to be more closely linked.

MEXICAN ARCHITECTURE

AN EXHIBITION of contemporary Mexican Architecture is to be shown at the RIBA from April 15 to May 2. It has been prepared by the Society of Mexican Architects and the National College of Architects of Mexico and will be opened by the Mexican Ambassador. Senor Arquitecto Pedro Ramírez Vázquez, president of the Society of Mexican Architects and of the National College of Architects of Mexico, will be coming to this country for the opening. Further details of the exhibition are awaited from Mexico.

BRIGHTON CONFERENCE HALL

BRIGHTON TOWN COUNCIL rejected, on March 24, the £750,000 plan for a new conference hall on the Royal Pavilion estate. Ald. A. V. Nicholls said there was no other suitable site for such a hall, which Brighton urgently needed. Cllr. J. C. Sherrott said that there were alternative sites, some derelict, quite near. A perspective of the proposed building was illustrated in our last issue.

MR. FAREY'S PRACTICE

"ONE OR TWO young assistants, of either sex," are required immediately to help in continuing the architectural, ecclesiastical and perspective practice of the late Mr. Cyril A. Farey. Details are published in our advertisement columns.

AN ARCHITECT-MAYOR

COUNCILLOR G. T. HARMAN, FRIBA, is the Mayor-elect of the Metropolitan Borough of Lewisham for the year 1955-56. This will be his second term of office for he was Mayor of the Borough in 1952-53. As comparatively few architects take part in local government, Mr. Harman is to be congratulated.

ARCHITECTURE SCHOLARSHIP

THE RESPONSE to the announcement for the Marley Tile Travelling Scholarship for the study of architecture in Mexico, Venezuela and Brazil (value £750) totalled some 72 applications from all parts of the world, and the assessors have been in some difficulty in arriving at a short list of candidates who were interviewed. The assessors were unanimous in awarding the scholarship to Gordon Graham, DipArch, ARIBA, of Nottingham.

GATESHEAD APPOINTMENT

MR. M. YENDALL, LRIBA, head of the architect's department with Gateshead Corporation, has been appointed deputy borough engineer of Gateshead.

PROFESSIONAL ANNOUNCEMENTS

MESSRS. DEVEREUX AND DAVIES, FF.RIBA, 3, Gover-street, London, WC1, wish to point out that their telephone number is incorrectly printed in the current issue of the London telephone directory; the correct telephone number is Museum 9472.

The offices of MR. IVOR HODGES, LRIBA, FRICS, are now at 52, Upper Berkeley-street, W1. (Tel.: Paddington 8318.)

The partnership of MESSRS. CHAPLIN AND AXTELL has been terminated. MR. R. A. AXTELL will continue in practice with MESSRS. D. A. Clarke, ARICS, and L. H. GREGORY under the title of MESSRS. R. A. AXTELL AND PTNRS., quantity surveyors, 88-90, Grays Inn-road, Holborn, WC1. (Tel.: Chancery 4246/7.)

The practice of the late Mr. Ronald L. Brewis, of 12, Cathedral-road, Cardiff, has been acquired by MR. J. L. JACKSON, ARICS, and will be continued under the title of MESSRS. BREWIS AND JACKSON, quantity surveyors, Imperial-buildings, 69-74, St. Mary-street, Cardiff. (Tel.: Cardiff 31357.)

MR. L. T. SWORN, ARICS, has commenced in private practice as a chartered quantity surveyor at 100, Easton-street, High Wycombe, Bucks, where he will be pleased to receive trade catalogues.

MR. ERNEST A. BAKER, FRICS, chartered quantity surveyor, has recently closed his temporary office at 116a/120, Rye-la., SE15, and opened a permanent office at 36, Addiscombe-rd., Croydon, Surrey. (Tel.: Croydon 9988).

FROM "THE BUILDER" OF 1855

Saturday, March 31, 1855

PORTABLE BARRACKS, OR EMIGRANTS' HUTS.—A portable hut or barrack, of wood and iron or other and lighter materials has been invented by Mr. J. R. Isaac, of Liverpool, on a plan whereby unskilled labour only is requisite for the erection or the taking of it to pieces and storing it in convenient portions. To use the inventor's own words in describing it, "Each room, lined throughout with felt, is 14 ft. by 12 and 7 ft. 6 in. high, with light weather-proof roof and stove in the centre, containing ample sleeping-room for from 14 to 16 men, weighing under 20 cwt. It is put together in a few minutes, without nails, and struck and repacked in the same space of time, folding into two packages of 7 ft. 3 in. by 6 ft. 3 in., and only 18 in. in thickness, or in four parts, 4½ cwt. each. By leaving out the ends, and bringing two or more together, a store or mess-room, barrack or hospital, may be formed of any length."

MODULAR CO-ORDINATION

Recent Work of the Building Research Station

THE Building Research Station's latest work on modular co-ordination was described by MR. W. A. ALLEN, ARIBA, in a paper on "Modular Co-ordination Research—the Evolving Pattern," given at a meeting of the Modular Society, held at the Royal Society of Arts, John Adam-street, WC2, on March 23. We take the following extracts from Mr. Allen's remarks:—

At the last meeting of the Society we heard an account, by Bruce Martin, of the work which his group at the British Standards Institution is doing on our joint study of modular co-ordination, and this is a counterpart paper to describe some of the Building Research Station's side of the work.

We are treating this study as a straightforward research and development programme, and this implies a certain pattern of attack common to scientific work generally.

Perhaps this seems too deliberate, or too "scientific" for the nature of the problem. I am sure some people feel so, and would prefer us to go more directly to our goal. Let me then tell you frankly our feeling about the matter. We are trying to reach what we believe to be the main objective of modular co-ordination, which is to have a simplified pattern of dimensions around which the whole of the industry, wet and dry, architectural and constructional, can organise itself. If it takes two or three years, that is not long in relation to the history of building.

PREFABRICATION

British experience of modular working lies almost entirely in prefabrication, mostly for schools but partly for housing, to the extent of some £30-£40 m. annually in completed buildings.

We concentrated first on the prefabrication systems which really were intended to be modular, and tried to appraise the experience which designers, builders and makers had of them, in terms of time, cost and quality. On this aspect we made a fairly detailed examination of the experience of the Architect's Department of the Herts County Council, and careful studies of two firms which make parts for prefabricated buildings, as well as undertaking site assembly.

Studies of prefabrication alone obviously could give us only limited help in applying modular ideas to conventional building, for they omit the brick and block construction which is and will remain for some time the main substance of the industry. We had, therefore, to consider how we could make good this deficiency. Fortunately, it came to our notice through the meetings of the European Productivity Agency, when the whole project was being discussed, that in Germany modular ideas had been extensively applied to conventional building. We therefore arranged a fairly detailed study of this during the early studies, and it proved most fruitful.

We also put in hand at an early stage some studies relating to costs, and to various matters which bear very intimately upon the actual choice of modules.

Before I go any farther, I must say something about terminology. For my own purposes now I am going to use the term "conventional" to represent the buildings which in British construction are based on relatively heavy combinations of masonry, steel, and concrete, using a fair amount of water and *in situ* construction. Then I will use "prefabrication" to mean systems of construction using rather large factory-made components, mainly put together by dry methods; and things like curtain walls, ceiling systems and prefabricated partitions will be generally called "dry assemblies."

ARCHITECTS' EXPERIENCE

Architects' experience of modular work is more varied and extensive in Britain than might be thought at first glance. Many offices have used planning grids, and quite a number of offices have done modular development work of various kinds, sometimes on parts of buildings such as partition or ceiling assemblies, and sometimes on whole building systems. All of these play a part in the general concept of modular design, the plan grids because they will normally be spaced on a modular basis, and the dry assemblies because interchangeability of parts is entirely dependent on some kind of dimensional co-ordination.

It is not possible to review this experience completely. We concentrated initially on the Herts County Architect's office, because of its outstanding experience in using prefabricated school construction, and we received so much help from them that I must take this opportunity to say that we are very grateful to Mr. Aslin, Mr. Tatton-Brown and their colleagues. But, in addition, we have questioned a moderate number of other architects, both private and official, who are active in this general field, and all have been very helpful.

The outstanding fact upon which all are agreed is now probably fairly well known. It is that prefabrication on a modular basis can effect a major economy in architects' offices.

It seems reasonable then to infer that modular working applied to building generally can lead to the same kinds of economies. Even the small architect's office ought to be able eventually to benefit from the standardised detailing possible with modular development.

I have said that we cannot possibly review all architectural experience of modular working, but this does not mean we do not want to know about it. We will very much appreciate receiving any information that can be sent to us, and we particularly need to know about different sizes of plan grids architects have used and why they chose them.

In 1954 we examined closely the work and results of two of the firms making parts for modular prefabricated schools, and we obtained most interesting information.

There are many details I cannot review here for I must keep to main points. Undoubtedly the outstanding one is the big increase of productivity and the simplification experienced.

Many opportunities have been taken to talk to builders and their foremen about their feelings of doing prefabricated work. No clear-cut consensus of view is evident but it is obvious that such work affects their organisation a great deal, because it makes a change in the balance of demand for one trade or against another, and in the ratio of total building force to supervisory staff. Some reactions against this were to be expected and were found; but opinions had not formed very fully.

The German experience was very interesting to review. So far as housing is concerned Germans turned their backs on alternative forms of construction after the war and devoted themselves to improving output of conventional work. As a basis for this they introduced a number pattern for dimensional co-ordination into the German standards (Federal Standard DIN 4172) and required construction and planning to be based on it wherever a subsidy was sought. Although application varies from poor to very good, they claim with reasonable justice that three-quarters of their 400,000 houses in 1953 were modular, and last year they say that virtually the whole of their 520,000 houses were basically modular, which represents a value per annum of completed buildings of the order of £600-£700m. The system has been thought out with bricks and blocks as a background though it is probably flexible enough to carry a considerable variety of techniques.

AN IMPORTANT FACTOR

In looking back over the early work I think I must add one more factor, somewhat intangible but very important. Our EPA Contract has brought us into touch with the modular authorities of all the principal countries of Western Europe, and we have become increasingly aware of the solidity of the movement towards modular co-ordination which is taking place at the same time in so many places. The impression is inescapable that the case for modular co-ordination is widely accepted, if not entirely on proof or demonstration, then on the sheer weight of the "rationale," which emerges both from the negative feelings that something better than accidental co-ordination must be possible, and the accumulation of positive indications, some minor and some major, that more order is possible, is much to be desired and will become increasingly needed as time goes on.

This seems particularly so in Britain now. Look for a moment at this range of reference dimensions either proposed or already in use for modular design: there are grids of 33 in., 36 in., 39 in., 40 in., 48 in., 50 in., 76 in. and 99 in. and quite likely I have missed out one or two. As a group they bear no kind of deliberate or systematic relation to one another nor to any base module, yet

some are growing strongly already and threaten to present themselves before long as blocks of entrenched assets and practices which, however good in themselves —and some carry the brightest flowerings of post-war British architecture—may nevertheless easily become an embarrassment to a well-ordered whole.

SYSTEMS COMPARED

Mr. Allen then went on to consider modules, planning grids and preferred dimensions. The simplest concept, he said, no doubt is the idea of a single module with all of its multiples accepted as part of a " system." Natural selection has also been considered, or sometimes accepted without question. But there is not much hope here, so far as we can see, for the view that natural selection will exclude any useful number of multiples of any particular module.

The German system is basically of the type which has a full sequence of multiples, though in fact it comprises two sequences side by side generating from separate modules.

M. le Corbusier's " Modulor " is quite a different kind of system, for there is no module in the ordinary sense of the word. He has two sequences of dimensions, like the Germans, each arranged so that each dimension is larger than its preceder by a constant ratio rather than by a fixed dimension. In other words, they are geometric. Of his two sequences, one has each of its dimensions twice as large as a corresponding dimension in the other sequence.

Criticisms of le Corbusier's system that seem to exist are these. There are rather considerable restrictions on the simple addition of equal-sized units to mesh to a larger size in the sequence. This is important. It is also the fact that the range of proportions is rather limited, and this seems likely to lead towards a narrower band of aesthetic possibilities than architects in general might be willing to accept. And the system as a whole seems to be less easy to comprehend and use than is necessary for a mechanism of this kind for our present purpose.

Although this review of systems is not comprehensive, I think the feeling that it gives to us is that none of the approaches tried so far offers a ready-made answer to the problem of dimensional co-ordination for a building industry like ours. We accept it as the case therefore that we have to think for ourselves in this country.

FOUR MAIN CONDITIONS

If one were approaching this *de novo* in the light of the experience which now exists, it seems to us that one can postulate at least four conditions that a system should satisfy. Perhaps there will prove to be others, but here are the four as we have set down for the moment.

First.—A full sequence of multiples up to about the first half dozen is needed to cover bricks, blocks and other smallish units.

Second. — Gaps in the sequence should enter at about that point and increase in size as the multiples themselves increase. The intervals between 30 and 36 are clearly less necessary than those between 0 and 6, for example.

Third.—It must be possible to add and combine the smaller numbers in very simple ways to equate to larger ones in the series. This is important if variety of use is to be made possible for products. We speak of this as the property of meshing.

Fourth.—It must be possible to associate numbers in the sequence to give a wide range of proportions. An analogue might be said to be the well-tempered scale in music, modular in character, capable of wide musical expression, but itself aesthetically almost neutral.

If we could meet these conditions, we might conceivably have the outlines of a system that would deserve closer consideration. We have been examining the problem and while we cannot claim to have proposals that we have tested to our own satisfaction, one particular result holds our interest for the moment, at least. Perhaps it will survive.

In principle what we did was to work on combinations of number series to see if certain merits which they possessed individually could be worked in together to advantage. The objective, broadly, might be described simply as a search for a way of deciding which multiples of a full sequence one should omit in order to leave the remainder with good rational relationships between them.

A PROMISING SEQUENCE

The most promising looking sequence resulted from a combination of an ordinary doubling series (1, 2, 4, 8, etc.) which gives the halvings and quarterings so commonly used in design, and a tripling series (1, 3, 9, 27), which gives the important thirdings, and a Fibonacci arrangement (1, 2, 3, 5, 8) which gives an unusual additive property. The whole background was, of course, more complex than this, but these are perhaps sufficient reasons for the moment.

Perhaps this sounds less tidy than it works out to be, for in fact it resolved itself into the following simple table. The Fibonacci arrangement is a spine, as it were, with doublings to right and triplings to left.

Triples		Fib.	Doubles		
9	3	1	2	4	8
18	6	2	4	8	16
27	9	3	6	12	24
	15	5	10	20	
		8	16	32	

Terms beyond 32 are omitted as being needlessly large for the present.

The series one gets from the table can also be written down in sequence and emerges as follows:

1 2 3 4 5 6 . 8 9 10 . 12 . . 15 16 . 18 . 20 . . . 24 . . 27 . . . . 32 . You will see readily that it meets my first two conditions—the presence of the first half-dozen terms and the spreading of the larger terms. In fact it omits about half of the total. The third condition—the one about ease of adding and combining smaller terms to equate to larger terms is also met at frequent points on the ascending scale of numbers. You might make your own trials of this, but consider 12 as one example. It is on the table and can be made up from the following elementary combinations, also on the table: 10+2, 9+3, 8+4 and 6+6; or 4×3, 3×4, 6×2, 2×6; or 3+4+5, 2+4+6, and so on.

The fourth condition referred to aesthetic neutrality. The sequence incorporates 33 forms of proportions, including all that are of any historical importance except 2, which seems to us perhaps less important than some of the others. Actually it is not in fact too difficult to do it by a roundabout method.

Now I must emphasise that this meeting of our conditions only merits our saying at this stage that it seems to be an arrangement that deserves further study. We might or might not be on a trail to our goal. The idea is merely put forward now for others to be able to study and discuss as a possibility, and we will welcome constructive comment upon it.

There are one or two remarks I would like to make on points of detail. Anyone who examines it with dimensions in place of these numbers should try it with quite a wide range of module sizes, including some which are smaller than those most commonly considered. They are quite interesting. Also, since it is always possible that we might find it useful to consider two base modules rather than one, it is worth noting that the table seems to have possibilities of simplifying the merger.

It seems to us inevitable that careful study of this kind must precede formal advocacy of a complete modular system, for if it is established, it will be a major event in the history of building.

This then brings me to the end of my review. Our preparatory work was to see in what ways and to what extent modular working could help manufacturers, builders and architects. Our current work is to find a " hypothesis," which is to say a basis for a dimensional framework, and the dimensions themselves. For the future, it is to establish the " hypothesis " by testing it, and then to study and press forward with its application and extension in practice, through agreements, development work and any sort of channel that will show good results.

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ARCHITECT'S LIBEL WRIT

LT.-COL. A. E. HENSON, president of the Incorporated Association of Architects and Surveyors, has instructed his solicitors to issue a writ for libel against Major G. B. J. Athoe. The writ is in respect of statements contained in memoranda circulated to members of the association.

Major Athoe was, for 25 years until he resigned in 1952, secretary of the association.

IN PARLIAMENT

Increased Building Demand Forecast

ENCOURAGING prospects for the building industry during the year are forecast in the Government's *Economic Survey*, 1955, published as a White Paper by the Stationery Office, on March 29.

"Demand for building should continue to increase this year," the Survey states. "There was an 80 per cent. increase between 1953 and 1954 in the amount of factory space for which industrial development certificates were approved, and although there will be a lapse of time before these approvals are translated into building work, they suggest that a large amount of industrial building is coming forward.

"Increased building is also expected in those fields which were most restricted during the period of control, such as shops, offices, hotels and churches: and the expanding road programme should provide additional work for the civil engineering industries.

"There should be at least as many houses completed this year as last. Now that nearly two million new permanent houses have been built since the war, local authorities will be increasingly concerned with slum clearance, and provision is made in the Housing Repairs and Rents Act, 1954, for the preparation of five-year slum clearance programmes. This Act is also designed to encourage a higher standard of maintenance of existing houses, whether privately or publicly owned, and to make it easier for conversions and improvements to be carried out.

"The gross value of building and civil engineering work increased by £100m. during 1954 to a total of more than £1,850m. The building force was very little larger than in 1953, and the increase in output was made possible by greater efficiency, which was assisted by some further shift of labour from repairs to new work. Supplies of building materials were adequate: over 50m. more bricks were produced than in 1953, bringing total output up to 7,250m., and cement output increased by nearly 750,000 tons to a total of just on 12m. tons.

"The ability of the building industry to expand its output in step with increasing demand was recognised during the year by the relaxation and subsequent removal of building controls. The change was marked by increases in factory building, the value of which rose by £30m., or nearly one-fifth, and in private house building. The number of private houses completed increased from 65,000 in 1953 to 92,000 in 1954 and a further 109,000 were started during the year. In all, nearly 354,000 houses were completed in 1954, compared with just under 327,000 in 1953."

SCHOOLS AND ROADS

Dealing with immediate prospects for output, the Survey states that there will be increased expenditure on the building of schools and a start will be made with the new programme of road construction. This road programme is part of the long-term proposals, plans for which include the development of supplies of fuel and power, steel and transport to meet the demands of an expanding economy. The generation of electricity from atomic energy is described as marking the start of a new venture which might revolutionise fuel and power.

Fixed investment was likely to be substantially higher this year than last. During 1954 there was an increase of £125m. (at 1953 prices) in this type of investment, a rise of 5 per cent. Of this, £69m. consisted of new building and £56m. of investment in plant, machinery and vehicles. The increase in new building work, though large, was smaller than in 1953, but whereas in 1953 most of that increase was in housing, in 1954 it was mainly in industrial and commercial building. Investment in housing rose by only £12m.: there was an increase in the private sector, but a fall in the public sector.

Manpower rose by 19,000 during the year, although the total at the end of the year was 15,000 below the level of the middle. At the end of 1953 there were 1,419,000 persons employed in the industry, and they had risen to 1,453,000 by the middle of 1954, declining to 1,438,000 at the end of the period.

Dealing with steel, the Survey forecasts an inevitable fresh rise in imports to meet the continuing home demand for many types of steel which has been moving ahead of output, until new capacity can be brought into operation. Production last year was 18,520,000 ingot tons, an increase of more than 900,000 tons over 1953. The industry has embarked on development plans to raise production to at least 22m. tons by 1958, and the likely demand up to 1962 was under consideration.

LCC (General Powers) Bill

DOUBTS about the provisions relating to the compulsory purchase and use of land contained in the London County Council (General Powers) Bill were expressed in the House of Commons when that measure came up for second reading on March 22.

MR. DEREK WALKER-SMITH, who moved the rejection of the Bill, said that Clause 32, which dealt with those questions, did not confer new powers of compulsory acquisition in law on the LCC, but gave a wider general power to develop commercially sites which were acquired for non-commercial purposes than existed or was bestowed by any other public general Act.

He objected to the clause because, he said, it put the profit motive into the compulsory acquisition of land by enabling the LCC to treat surplus land as a means of swelling revenue. It would put the county council, as a local authority, into business as a commercial developer of offices, shops and warehouses, and provided a standing temptation to them to over-estimate the amount of land needed for statutory purposes in compulsory purchase orders so that they would have the possibility of revenue from surplus land when the statutory purposes had been met.

It was obvious that a local authority could not in all cases exactly assess and define the precise area of land it would require for the execution of a statutory purpose, and land might turn out not to be needed for the purpose for which it was acquired.

Two other clauses in the Bill were a departure from the general law in that they lessened and limited the right and power of a house-owner to remedy defects himself by carrying out the works at his own expense. They imposed on the owner the necessity and liability of being billed for it by the local authority, and such were the ways of local authorities that unfortunately the remedy might be more expensive than would be the case with the private householder. One of those clauses removed the opportunity of the owner to remedy defects himself at his own expense in all cases where the work cost less than £250.

MR. ENOCH POWELL, who seconded, said that it would be wrong for the House, which had approved a Government decision that land compulsorily acquired by a Government department for one purpose and not immediately required by another department for another similar purpose should be sold, to confer on a local authority the power to retain and use commercially land surplus to its requirements for its statutory duties.

MR. ARTHUR SKEFFINGTON, a member of the LCC, said that powers in the two clauses relating to repairs and defects had already been given to many local authorities, and the town clerks of three London boroughs had urged their MPs to support those clauses. About 120 authorities had the powers in clause 32, which did not authorise the council to carry on any trade or businesses on the redeveloped site.

SIR HAROLD WEBBE said that there was definitely the intention to give the authority power to go into the business of land development, and that was as much business as selling boots and shoes. He did not believe the LCC or any other authority was competent to enter into land development business. All the years he had spent on it had shown that it was incompetent to carry on trade. His opinion of the value of Ministerial control over matters of this kind was low.

MRS. FREDA CORBET, also a member of the LCC, said that the county council had no intention of trying to set up a land development corporation to build offices to get so much rent that they would not need to levy a rate in London. There was no analogy here to Crichel Down, which related to agricultural land. The council would not seek land they knew would be surplus, but they did get genuine surplus land.

After further debate the motion to reject the Bill was withdrawn, and it was read a second time.

Scottish Building Policy

THE Government's housing programme and other aspects of their building policy in Scotland, including the proposed atomic power stations and the project for a crossing of the Firth of Forth, came under fire in the Commons on March 22, when Labour members for Scottish constituencies sought further information from the Secretary of State about his intentions in these matters.

MRS. JEAN MANN asked to what extent the housing programme, apart from Glasgow, was being overtaken, and in how many burghs it was nearing completion.

COMMANDER GALBRAITH, Under-Secretary, Scottish Office, said that a total of 255,000 permanent and temporary houses had been built since the war, including 37,000 built in Glasgow. Of the 230 housing authorities in Scotland, 51 had no houses under construction and 28 had less than ten. Those 79 authorities comprised five county councils and the town councils of 74 small burghs. While other considerations might

apply in particular cases, the reduction of the waiting lists was the main reason why building had come to an end, or had been slowed down in most of those districts.

MRS. MANN asked whether Cdr. Galbraith was satisfied that a reduction in the waiting lists was an indication that no more houses were wanted, and whether it was not possible to have a survey of houses that were in the last stages of their life and were becoming a danger because of the state of their decay.

CDR. GALBRAITH said that that was a matter for the local authorities concerned. Mrs. Mann would know that the Secretary of State had asked for information under a recent Act which would involve a survey being made.

MR. MANUEL said that there had been no survey since 1943, and asked whether it would be possible to give an estimate of the wastage that had occurred since then.

CDR. GALBRAITH said that he could not supply that information.

EDINBURGH SCHEMES

MR. OSWALD asked when the Edinburgh Corporation submitted a request to the department for permission to demolish and rebuild houses in the Dumbiedykes area of the Holyrood ward of the city. He also asked if the Secretary of State was aware of the shortage of houses in the city; and was now able to grant permission to the corporation to proceed with their plans to demolish slum property and to rebuild houses in the centre of the city.

CDR. GALBRAITH: The only proposals submitted by the corporation for the demolition and rebuilding of houses in the centre of the city are those relating to the Dumbiedykes area contained in the corporation's development plan. These proposals were submitted by way of an amendment to the plan on January 14, 1954; and, as the plan is still under consideration, the corporation asked on February 17, 1955, that the proposals be separately considered. The Secretary of State hopes to give his decision on the proposal soon.

MR. HOY asked what proposals the Secretary of State had received from Edinburgh corporation for slum clearance and rebuilding schemes in Leith.

CDR. GALBRAITH said that a Clearance Order had been confirmed in 1952 under which the demolition of 88 unfit houses was now proceeding at Burns Street, Leith. He understood that the corporation were giving preliminary consideration to the clearance of other small central areas in Leith, but no specific proposals had yet been submitted.

ATOMIC POWER STATIONS

MR. NABARRO asked how many of the 12 projected atomic power stations were to be in Scotland; and how far it was proposed that the North of Scotland Hydro-Electric Board should participate.

MR. HENDERSON STEWART, Under-Secretary, Scottish Office: No decision has yet been reached on the location of any of these stations, but the Scottish Electricity Boards and the British Electricity Authority are in consultation with the Atomic Energy Authority on this and other matters.

MR. NABARRO asked what action the Secretary of State was taking to revise the new water-power capital construction plans, 1955-65, of the North of Scotland Hydro-Electric Board, in view of the onset of nuclear power generation of electricity and the recent White Paper on that subject.

MR. HENDERSON STEWART: The Secretary of State does not consider that the nuclear power programme requires any revision of the board's plans so far submitted to him. The board have told him, however, that they are considering the development of large-scale pumped storage schemes which may prove to be of increasing importance as the development of nuclear power proceeds.

In reply to a question on the proposed underwater crossing of the Forth, Mr. Henderson Stewart said that the Government had given a firm undertaking that a start would be made in the next four years with a crossing of the Forth, either by bridge or tube. They stood by it.

MR. PATRICK MAITLAND asked how many applications had been made for certificates of disrepair under the Housing (Rent and Repairs) (Scotland) Act, in Scotland, and in the county and burgh of Lanark.

MR. J. STUART, Secretary of State for Scotland, in a written reply, stated: The figures for the period up to December 31, 1954, are 1,751, 285 and nil respectively.

OTHER BUSINESS

MONOPOLIES COMMISSION

MR. WILLEY asked the President of the Board of Trade, when he expected the Monopolies Commission to report on sand and gravel, and standard metal windows and doors.

MR. HENRY STRAUSS, Parliamentary Secretary, Board of Trade, in a written reply on March 22, said: I understand that the Commission hope to complete this summer their inquiry into the supply of sand and gravel in certain parts of Scotland. The inquiry into the supply of metal windows and doors is less advanced, and I cannot say when it is likely to be completed.

MALDON DEVELOPMENT

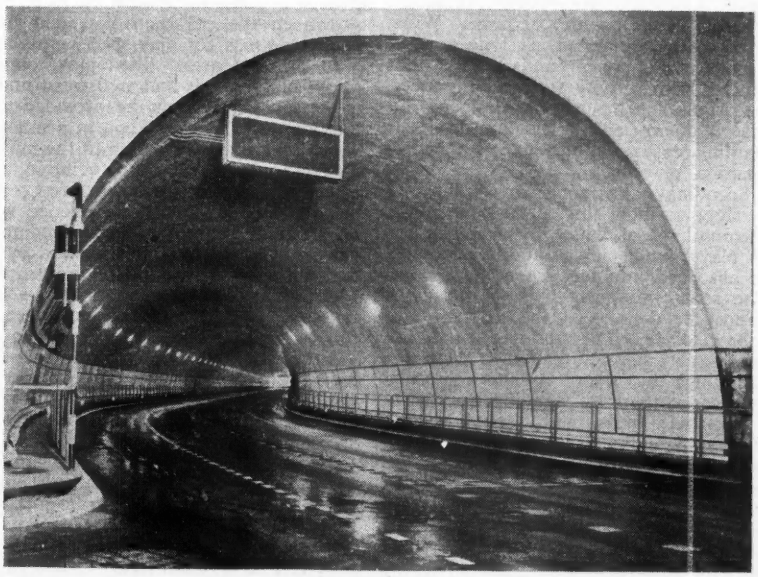
MR. DRIBERG asked the President of the Board of Trade if he was aware of the concern caused locally by the closing of Messrs. Crittalls' factory at Heybridge, Maldon, Essex; and if, in view of the fact that many Maldon people already had to travel 20 miles daily to and from their work, he would encourage the siting of new industries in or near Maldon.

MR. PETER THORNEYCROFT replied, on March 24: Yes, when suitable opportunity occurs.

FIXED PRICE CONTRACTS

MR. HOLT asked the Chancellor of the Exchequer on March 24 if he would recommend to the appropriate departments that, in future, Government contracts should be made firm contracts without escape clauses for increases in the cost of materials or labour.

MR. HENRY BROOKE, Financial Secretary, Treasury: It is already the general policy for Government departments to call for tenders at fixed prices, and not to include variation of price clauses in their contracts. The uniform application of these principles is not, however, always practicable, for example, in the case of certain long-term contracts.



NEW DADO FOR MERSEY TUNNEL. More than five miles of 6-ft. deep cream-coloured "Vitrolite" glass panelling is being used to replace the original black glass dado of Mersey Tunnel. The new panels will run as continuous bands throught both sides of the tunnel, and are being installed in a continuous operation over 18 months. Five glaziers and four labourers carry out the work each night, and the last panel is expected to be in place by next August. The tunnel arch is being re-sprayed with cream enamel and white lights are being replaced with sodium lighting. About 9,000 panels of "Vitrolite" are being supplied by Pilkington Brothers, Ltd., for the operation, which is being carried out by the Mersey Tunnel's Joint Committee of the Maintenance Department and the Liverpool City Engineer and Surveyor, Mr. H. T. Hough, MICE, MTPI.

FARM BUILDINGS

Their Improvement and Renovation

A CONFERENCE on improvement and renovation of farm buildings was held recently by the Agricultural Land Service (Eastern Province) at the Norfolk School of Agriculture, Easton Hall, Norwich. The chair was taken by Col. Sir Robert Gooch, DSO. One of the papers given dealt with "Building Materials and Methods," and was presented by Mr. H. Hollinrake, Farm Buildings Advisory Officer, Eastern Province.

MR. HOLLINRAKE said that all owners or occupiers would be well advised to select materials for renovation work which would be simple and easy to use by the farm staff. Considerable controversy had arisen in connection with the use of bricks or concrete blocks for building walls. Concrete blocks were usually more expensive, but with farm labour they were much cheaper to lay, so the ultimate cost of the wall was about the same as when using bricks. Walls built of concrete blocks took much less time to build and semi-skilled labour could undertake the job efficiently. If concrete blocks were used, however, the wall became damp, and many farmers tended to apply coatings of bituminous paint on the outside surface to remedy the fault. The paint, however, should be applied on the inside surface as an impervious layer, and two coats were recommended. The outside surface of the blocks would then allow moisture to evaporate in a satisfactory manner, while at all times the inside of the building was completely dry.

Many roofs in East Anglia were covered with pantiles. If the roof leaked, Mr. Hollinrake recommended replacing the tiles with a new roof of asbestos sheeting. The cost of the entirely new roof was generally no more than for taking off the pantiles, battening, laying waterproof felt, and replacing the tiles. However, if asbestos sheets were used, the holes should be drilled, since if holes were punched, the sheets would crack.

Asbestos roofs were notoriously cold, said Mr. Hollinrake, and if it were necessary to house some classes of stock under them it was advisable to ensure adequate heat retention by insulating the ceiling with glass wool. He recommended using thin sheets of hardboard to hold the glass wool in position. Although its cost was higher than when using chicken wire or felt, it made a much more permanent job.

Anyone wishing to install an extra floor in a barn would do well to compare the cost with the outlay required for an entirely new building. Generally speaking the cost of an additional floor was in the neighbourhood of 12s. 6d. per sq. ft. A new Dutch barn would cost about 5s. per sq. ft., and if walled in and concreted all round, the entire new building would cost almost the same as putting in a new floor in the old building.

Painting woodwork on farm buildings was a costly item, and did not maintain the wood in good condition as efficiently as when a preservative was used. The speaker recommended that farmers erecting new buildings should have all the timber—both for inside and outside use—pressure-treated with a preservative like creosote. The cost was about 2s. per cu. ft., and added about 15 per cent. to the cost of the timber. Once done, however, it saved all costs of painting and overcame the need for regular renovations and replacement of decayed wood.

When constructing roads with farm labour, quite often mistaken views were held on the correct way to apply the ashes. When ashes were purchased, they were usually dumped on top of the hardcore, which then sank into the subsoil. Mr. Hollinrake recommended putting the ashes on top of the subsoil, then laying the hardcore, and putting on the final road surface. Experience had shown that 2-3 in. of ashes were best. They helped to spread the load of weight and stopped the surge of subsoil up into the hardcore.

LANDSCAPE FOR FLATS

Two ILA Papers

AT a general meeting of the Institute of Landscape Architects held at the Housing Centre, 13 Suffolk-street, SW1 on February 17, papers, illustrated by slides, on "Landscape for Flats" were read by Miss Sylvia Crowe, FILA, and Mr. A. Hedley Richmond, FILA. Following are extracts taken from the papers:—

MISS SYLVIA CROWE: The landscape round flats should serve two purposes, it should at the same time minister to the pleasure of the people living in the flats and provide a landscape setting for the buildings. In this country up to the present it has been depressingly rare to find either aim fully satisfied, and almost unknown to find both.

Some kind of space division and sense of enclosure is essential. It is, on a small scale, the same problem which faces us in the country at large. Wide, open spaces are grand, as long as they remain wide, open and empty, but covered with activity and encumbrances, the landscapes must be designed to absorb them, either by homogeneous planting, or by contouring, or by a combination of both.

Scandinavia has gone part of the way to show us how this is possible in the surroundings of flats. Every block has its playground, either entirely concealed or absorbed into the general landscape. The sense of space division outside is almost as definite as the division into rooms inside. The buildings, too, are surely more happily related to their surroundings by these closely composed landscapes than by standing up starkly from their grass and asphalt plains. But in Scandinavia they have certain advantages over us. Our problems are perhaps harder, but surely capable of solution along the same lines, and I am going to ask my colleague to tell us how far has he found it possible to overcome our difficulties.

MR. A. H. RICHMOND: On an estate, blocks of flats with communal gardens should be kept apart from maisonettes with their gardens attached. There is the ever-pressing question—should the garden area of the whole estate be completely open for the use of the tenants and thereby educate the unruly to appreciate the gardens, or should the gardens be fenced off and kept to look at from afar with children's playgrounds and play equipment at points serving several blocks or the entire estate. Both have been tried and results seen.

On some estates where it was "keep off the grass" the tenants practically in a body have taken the law into their own hands and made the place a shambles within a few weeks or even days. Other estates, planned in a similar manner, have been respected and are a joy to look upon. Precisely the same "fate" has come to the free and unfenced sites. The lesson learned from this has been in a word, "*access.*" Vandalism—this dreadful lust for sheer destruction—is a very real menace on new housing estates of all kinds and the large estates of flats suffer to the greatest extent. Personally I have had the pleasure of seeing this vandalism checked and, I firmly believe, lessened by carefully designed access paths and roads, playgrounds which are satisfying to most age groups and fenced off areas devoted to planting and lawns.

QUESTION OF FENCING

This question of fencing is a very debatable one and there are estates where fencing is the rule and others where no fencing is the rule. By visiting these sites you could judge better still which are the more attractive when they are new and just completed. But I will tell you this, that those with the fencing are worth looking at after three or four years but those unfenced are, on the whole, sad to look upon.

Even so, is it right to deprive people of the use of any part of the gardens? If an estate is planned for the use of the people and not to a pretty preconceived pattern or merely the outward picture as shown in the perspective sketch, then adequate areas for play space, grass and hard surfaced areas, fitted playgrounds, rough playgrounds and well treed undulating grass areas can be provided and the best existing trees kept, in a manner which will give satisfaction to the majority of people, including the children, and a delight to the discerning few. To achieve this, one must commence with an accurate ground survey and comprehensive tree survey and schedules by an authority on trees and their diseases, etc. —not as has happened more than a few times in my experience, and recently, too, a complete estate planned on an enlarged ordnance map with no other levels than the ordnance contour and no notice whatever taken of the trees—over 500 of them, a third of which were specimens.

However, having obtained the surveys, it is vital to decide first the exit points for places of interest and transport stations, the number of blocks of flats to give required density, the areas to be allocated to children's play spaces of all kinds. It is absolutely necessary to make sure the plan—which has been drawn on a flat sheet of paper—works by visiting the site again and again under all conditions and times of day.

Where the landscape architect has been one of the team of planners the estates have worked, or are working, mainly due to the fact that at the outset the natural features—trees and undulations—are duly considered and taken into account.

ATOMIC FACTORIES

Their Design and Construction

A PAPER on "The Civil Engineer and Britain's Atomic Factories" was presented by MR. D. R. R. DICK, BSc (Eng), MICE, at a meeting of the Institution of Civil Engineers at Great George-street, Westminster, SW1, on March 8. A summary of Mr. Dick's remarks is given below.

Considerable experience has now been gained of the problems peculiar to the design and construction of establishments associated with atomic research and the production of fissile material. The substances handled in the atomic establishments are radioactive and most plant is, therefore, contained within concrete or brick shields, through which all control and other mechanisms must pass.

Research and development work is going on continuously, and allowances have to be made for the incorporation of changes resulting from new information at all stages of construction. Since many of the structures are on a massive scale, the work has to be carried out to a degree of accuracy not normally associated with civil engineering.

The four self-sustaining nuclear reactors so far completed in Britain have each consisted of a central block of graphite housing the fuel elements enclosed in a reinforced concrete box up to 9 feet thick. This box is lined internally with steel plate which, in the Windscale reactors, is 6 inches thick. These reactors are air-cooled and the concrete has, therefore, had to be air-tight as well as of a uniform high density. Charging, discharging, and control of the reactors is effected from outside the concrete box and involves the provision of a large number of tubes through the walls and roof. The graphite core is constructed to an accuracy of a few thousandths of an inch after the concrete work is complete, and each of the tubes has to register with channels in the graphite constructed to a similar degree of accuracy.

ROOF CONSTRUCTION

The construction of heavy concrete roofs over the top of plant has been necessary not only in reactors but also in the chemical plants, and use has been made of steel and prestressed concrete beams integral with the roof, as well as Bailey bridging and lattice girders on a temporary basis, for supporting shuttering. In addition, chemical plants have their own special problems in that final layouts of plant and piping are not normally available until the civil construction work is well advanced. For this reason the structural designs have had to be such that extensive modifications to suit the plant were possible at all stages of construction. This requirement, however, is not confined to chemical plant, as can be illustrated by the ventilation shafts for the reactors at Windscale, where a filter system was introduced at the top of the shafts when construction had already proceeded to a height of 70 feet.

The treatment of solid and liquid residues from the plants involves the provision of storage facilities which take the form of silos, prestressed concrete tanks, and stainless steel tanks in shielded compounds. Pipework between such tanks and the plant is run in concrete ducts which provide the necessary shielding. At Windscale many of these pipes are carried overhead, and the supporting gantries are fairly elaborate. The liquid effluents can also be radioactive and have to be rendered innocuous before discharge into rivers or the sea.

REMOVAL FROM ARCHITECTS' REGISTER

Advertising Through Book of Plans

THE REGISTRAR of the Architects' Registration Council of the United Kingdom has issued the following statement:—

William Mathias Carter, of Lloyds Bank-chambers, 4 and 5 King-street, Richmond, Surrey, has been removed from the Register of Architects under Section 7 of the Architects Registration Act, 1931, on a report of the Discipline Committee that he has been guilty of conduct disgraceful to him in his capacity as an architect.

The Council have disqualified him for registration for a period of five years.

This architect had published two booklets containing plans of small houses offering working drawings and specifications for fees ranging from 12 to 15 guineas. His name appeared at the back of the booklets as Consulting Architect to the publishers, but in fact he was himself responsible for publication and the so-called Director was his own nominee.

The Committee found him guilty:

(1) By reason of the following passage in the booklets: "The Planahome method of home selection offers you the simple and direct approach which will help you to choose and build your new home and may save you £200 or more in charges for specially drawn up plans and specifications, not to speak of months of frazzled nerves and the risk of a culminating disappointment."

Neither of the booklets contained any indication that an architect is required to supervise the erection of a building and approve the materials selected, the purchaser being left to infer that his interests would be fully protected by the working drawings and specifications.

(2) On the ground that he had publicly advertised himself as an architect by reason of the commendation of his work in the booklets; and

(3) On the ground that he had accepted advertisements from building contractors and manufacturers of building materials and was therefore carrying on a business inconsistent and out of keeping with his duties as an architect.

OBITUARY

Charles T. Adshead, ARIBA

THE DEATH is reported at Hazel Grove, of Mr. Charles Thomas Adshead, ARIBA. Mr. Adshead, who was 76. was a partner in the firm of Adshead, Topham and Adshead. He was made ARIBA in 1902, a year after winning the RIBA Ashpitel prize.

STEELWORK TENDERS

Scottish Hospital Board to Refer to Monopolies Commission

THE Regional Hospital Board for South-eastern Scotland has decided to tell the Monopolies Commission that when the board recently asked for tenders for steelwork at a Kirkcaldy hospital, all five tenders quoted a price of £26,303 19s. 2d. According to a report in the *Manchester Guardian* the five firms concerned are A. and J. Main and Co., Ltd.; Redpath, Brown and Co., Ltd.; Alexander Findlay and Co., Ltd.; P. and W. MacLennan, Ltd.; and Frederick Braby and Co., Ltd.

The tenders for work at the Victoria Hospital, Kirkcaldy, were considered by the hospital board works and buildings committee. The committee agreed to accept the tender of Redpath, Brown and to draw the attention of the Department of Health for Scotland and the Monopolies Commission to the situation.

On March 28 the committee's action was endorsed without discussion at a meeting of the hospital board in Edinburgh. After a meeting a member of the board said, "All that we could do was to accept the tender of one of the firms after taking technical advice."

SHARE-PROFIT PLAN

Salford's Offer to Operatives

TO ATTRACT building operatives for new housing schemes Salford Corporation will offer them profit-sharing terms. They will be invited to inspect plans of the work on which they will be engaged, and to offer suggestions for improved and cheaper methods of tackling the job. "Any saving as between the actual cost of the work and the lowest tender or estimated cost would be shared between the Corporation and the workmen," said Councillor B. Burchill on March 24. "In saving, say, £1,000 it is proposed that £600 should be shared by the workmen, and the remaining £400 used to create underspendings of the building estimates, and thus ease the rates. Apart from financial considerations for the work-people and the Corporation, the plan should make for better and quicker building."

DISCUSSION WITH UNIONS

Councillor Burchill added that his committee and various building operatives' unions had already discussed and agreed on certain plans, particularly with regard to making tradesmen, such as plumbers, glaziers, and others, as mobile as possible. This would cut out waiting times between the work at one side and that at another in some distant parts of the City.

A Manchester Corporation senior executive has described the proposal as "revolutionary"; the Housing Department paid bonuses according to output, but there was no bonus on completion of the job and operatives did not inspect plans of the work they would be engaged in. Mr. Stanley V. May, Regional Officer of the Building Trades Federation, said that incentive schemes were being worked with great success by local authorities with direct labour and by private enterprise.

BRITISH STANDARDS

Recent New Publications

A NEW British Standard for phenolic laminated sheet has been issued by the British Standards Institution (BS 2572, price 4s.). It specifies requirements for a number of types of phenolic laminated sheet which, in general, have good mechanical qualities, electrical insulating properties and resistance to corrosive influences.

The tests specified are designed to assess and differentiate between the types; they have not been selected in consideration of any particular use to which the material may be put. The material is first divided into two groups: (a) where the mechanical properties in both directions are of the same order; and (b) where they are markedly different. The first group is then sub-divided into four classes, according to whether the sheet is manufactured with an asbestos cotton fabric, cellulose paper or wood veneer filter. Altogether, 14 different types of material are covered.

The standard specifies requirements for appearance, flatness, tolerance on thickness and marking of the material. Additionally, limits are laid down for the following physical properties: cross breaking strength, impact strength, water absorption, electric strength (both flatwise and edgewise), insulation resistance after immersion in water, and crushing strength after heating. The methods of test are specified in the appendices, and attention is drawn to the optional use of the British Standard certification mark.

Another new British Standard (B.S. 2584, price 2s. 6d.), the publication of which has been announced, deals with ratchet-driven screwdrivers. This type of tool in the hands of a craftsman is stated to be valuable as a saver of time in many applications, but it is stressed that this does depend on the tool being of good quality. For this reason, much thought has been given to the quality aspect in the preparation of this specification.

In order not to interfere with any technical development, details of the internal design of the ratchet mechanism are not given, but the clauses relating to the assembly, the operation of the ratchet control and the torque tests are all designed to give adequate assurance of the quality.

The podger spanner, used in steel construction work, often at considerable heights, is dealt with in BS 2583 (price 3s.). Although its legitimate purpose is the alignment of bolt and rivet holes in girders and beams, it is often used (quite wrongly) as a convenient means of climbing, since the podger can be inserted and the spanner used as a step or perch. A spanner designed to meet these orthodox and unorthodox uses needs to be strong, tough and free from brittleness—all properties which were given full consideration during the preparation of this standard.

The standard specifies the dimensions and proportions of the spanners. Although it was not possible to specify requirements for a product which would be safe under all conditions of use, manufacture in accordance with the standard will ensure that the spanners reach a desirable minimum standard of quality and performance.

A new British Standard for "Polystyrene tiles for walls and ceilings" (BS 2552, price 2s. 6d.) has been prepared under the authority of the Plastics Industry Standards Committee. The document specifies the dimensions, materials, opacity, colour fastness and workmanship of polystyrene tiles. It also specifies methods of test, and further clauses cover such matters as the marking of the tile containers and the manufacturer's certificate. Detailed requirements for the adhesives and notes on the installation and maintenance of tiles are given in appendices.

Copies of the above standards may be obtained from the British Standards Institution, Sales Branch, 2, Park-street, W1.

CITY AND GUILDS INSTITUTE

Annual Report

THEIR seventy-fifth report has now been issued by the Council of the City and Guilds of London Institute.

The main event of the Institute's past year's activities, states the report, has been the launching of the ninth examining body officially known as the Associated Examining Board for the General Certificate of Education. This new body is the only one of the nine now examining for the General Certificate of Education on which industrial and professional interests are directly represented, and the Board has therefore had in mind the production of syllabuses and the introduction of new subjects suitable for students intending to enter industry and commerce. The Council are not only to participate in the scheme as a sponsor, but also to be responsible for finance and administration in the initial period.

The Board has completed the preparation of its prospects for the examinations of 1955; 69 syllabuses have been prepared and received the approval of the Secondary School Examinations Council, and further syllabuses are in preparation or under discussion.

The number of candidates who sat for the Department's examinations in 1954 totalled 88,560, an increase of 6,273 over the previous year.

The report states that it would seem that facilities for technical and industrial training are expanding, that employees are alive to the needs of the day: and that the maximum number of examination candidates which must eventually be limited by population, has not yet been reached.

SEMI-SKILLED LABOUR

Need for Classification

UNLIKE OTHER trades, the building industry had at the moment only two recognised grades, craftsmen and labourers, but with methods of construction changing almost daily another grade of labour was being brought in, MR. H. KAY, ARIBA, told members of the Dudley branch of the Federation of Master Builders on March 17. This semi-skilled labour, said Mr. Kay, had been introduced largely by mechanisation.

"I firmly believe it will increase in the future, and I equally believe you will have to give very serious consideration to the recognition of this classification," he added. Speaking of the high costs builders were having to face, Mr. Kay said that they would be faced with higher ones, for in the last few days the National Joint Council had approved in principle recent wage awards.

BUILDING SITE ACCIDENT

Inquest Jury Urge More Care

AFTER hearing how a young man died from injuries received when building material crashed from a hoist in use on the erection of the Aston Reservoir flats, Salford Bridge, Birmingham, the jury at the Birmingham inquest on March 22 added a rider. It was that in future an older man should be at the bottom of the hoist to supervise the loading "instead of two boys."

The inquest was on Gerald Joseph McSweeney, aged 18, who died in Birmingham General Hospital soon after the accident on Feberuary 25. The jury's verdict was "accidental death."

After the verdict it was stated that an older man was normally in charge of the loading but that on the day of the accident he was away ill.

The coroner (Mr. G. Billington) remarked that the jury's rider meant there should be supervision by an older man all the time.

VALUE AS A PLANNING FACTOR

RICS Paper

A PAPER on the subject of "Value as a Factor in Planning" was presented by Mr. W. K. Shepherd, FRICS, Estates and Development Valuer, City of Plymouth, at a meeting of the Royal Institution of Chartered Surveyors, on March 22, at 12, Great George-street, SW1. The points discussed included problems arising in practice; rent and planning; and the type and use of buildings.

The conclusion arrived at by Mr. Shepherd from his consideration of the question was that the following factors were the most important: The valuation surveyor should be called upon to play his full part as a member of the planning team, and he should also be brought in as early as possible and consulted at all stages, since the success of the scheme largely depended upon his advice.

In cases of comprehensive redevelopment the valuation surveyor was the man who had to make the plan work and produce financial results that were satisfactory both to the planning authority and to the developer. Value was a vital factor in planning, Mr. Shepherd emphasised, and if the scheme were not financially sound, the development proposed would probably not materialise at all.

FEDERATION OF STEEPLEJACKS

Election of Officers

THE ninth annual general meeting of the National Federation of Master Steeplejacks and Lightning Conductor Engineers was held in London recently. The following Officers were elected:—

President: Q. Williamson. Vice-President: S. Larkins. Council: W. Bacon; A. E. D. Beaumont; D. Campbell; J. Davis; and R. A. Price.

The main item of interest during the year was concerned with the use of the bosun's chair. The British Standards Institution was to consider drafting a British Standard Specification for bosuns' chairs and a sub-committee had been appointed. Mr. A. E. D. Beaumont had been nominated to represent the Federation on this committee. There had been several meetings, and the sub-committee were considering a new type.

PRESTRESSED CONCRETE BEAMS

British Railways' Successful Experiments with 0.276 in. Diameter Smooth Wire

RESULTS of special tests undertaken by the Eastern Region, British Railways, to investigate the suitability of using 0.276 in. diameter smooth wire for pre-tensioning in the manufacture of prestressed concrete beams have now been announced. These results, it is believed, will be of considerable general interest to the building and construction industries. The official report on the tests is as follows:

Pre-tensioning requires a good bond to avoid any possibility of slip of the tensioned steel. This was the reason why, originally, only piano wire of 2-mm. diameter was considered suitable by Hoyer some 15 years ago. However, smooth British wire 0.2 in. diameter has been successfully used for pre-tensioning for more than 10 years. The surface conditions of smooth wire 0.2 in. diameter are quite satisfactory to ensure sufficient bond but they may be further improved by the provision of indentations. There is no doubt that the bond resistance is increased if wire of smaller diameter is used, but there is no advantage in the use of many such wires, if larger sizes ensure satisfactory bond. The latter need less labour for placing and tensioning and allow a larger spacing between the individual wires and thus the use of larger aggregates which results in greater concrete strength.

This advantage of using fewer pre-tensioned wires in the larger prestressed beams induced the Civil Engineer's Department, British Railways, Eastern Region, to carry out specal tests to investigate the applicability of smooth wire of 0.276 in. diameter for pre-tensioning. Messrs. Richard Johnson and Nephew, the makers of the wire, supplied the material and Anglian Building Products Ltd., co-operated in these investigations. They manufactured the beams and placed their factory at the disposal of British Railways and thus helped to a great extent in the valuable results described below.

SATISFACTORY BOND

A first series of tests was carried out in the summer of 1952, which proved the suitability from the point of view of bond, of smooth 0.276 in. wire for pre-tensioning in co-operation with high-strength concrete, as generally used in first-class concrete works.

In 1953-54 further static and fatigue tests were carried out jointly by the Civil Engineer's Department, Eastern Region, and the Railway Research Department at Derby on the beams manufactured by Anglian Building Products Ltd., at Lenwade.

In the first tests of 1952, six types of beams were tested, having lengths which varied between 10 ft. 6 in. and 21 ft. 6 in. with two central point loads 3 ft. 6 in. apart, and the beams were loaded for three different spans of 9 ft. 6 in., 13 ft. 6 in. and 19 ft. 6 in. All the beams had a rectangular cross section of 8 in. width and 12½ in. depth and this was adopted because moulds of that size were already in being at Lenwade.

Six tensioned bottom wires and two tensioned top wires, 0.276 in. diameter were provided in all specimens: some of them had additional non-tensioned wires placed in twin twisted pairs. The percentage of reinforcement was 0.4 per cent. with regard to the tensioned wires, and 1.0 per cent. and 1.3 per cent. in the specimens in which non-tensioned wires were added.

The beams were manufactured without stirrups, and in those specimens with a high percentage of reinforcement early shear failure took place which gave an opportunity to study, also, the behaviour due to shear. The specimens which contained tensioned wires only, showed a satisfactory bond of wire not only for the length of 15 ft. 6 in. (span 13 ft. 6 in.) but also for so short a length as 10 ft. 6 in. (span 9 ft. 6 in.).

In the longer beam the actual failure load appreciably exceeded the load calculated for the maximum steel force based on the strength of 226,000 p.s.i. (101 tons/in²) balanced by a rectangular concrete stress block corresponding to a prism strength of 6,000 p.s.i.

In the shorter beam a combined shear and bending failure took place due to the increased shear stresses; nevertheless, no slip of the wire occurred and the actual failure load was in accordance with the calculated value.

Of the beams having a larger percentage (1 per cent.) only one of 19 ft. 6 in. span may be mentioned. In this case combined shear and bending failure occurred at a load which was only 90 per cent. of the calculated maximum, but slip between wire and concrete was not observed.

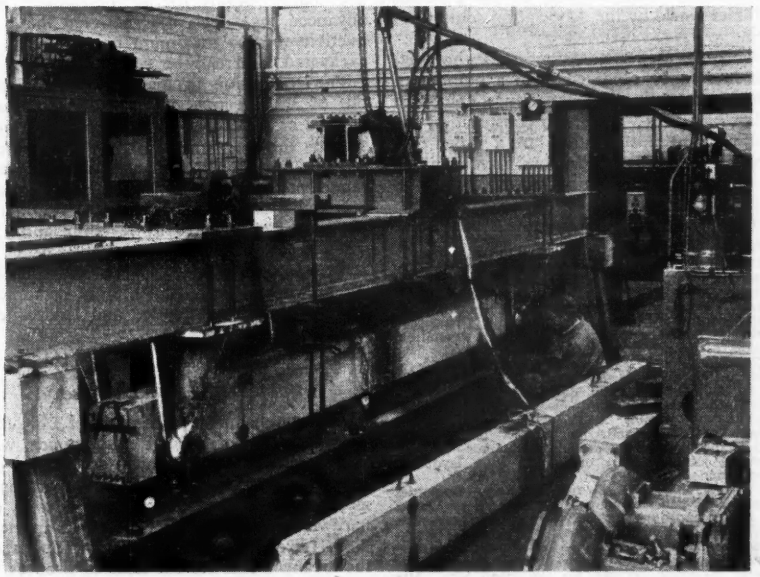
Further static tests were carried out in 1953 when a beam was tested in which six wires were tensioned and six single wires were non-tensioned. In this case shear failure was avoided by the provision of special stirrups, but apparently slip of the non-tensioned wires took place and plain straight untensioned 0.276 in. diameter wires are not recommended. It may, however, be concluded that smooth tensioned 0.276 in. wire spaced as closely as 1¼ in. will ensure sufficient bond resistance in concrete of a prism strength of 6,000 p.s.i.

It has been ascertained, by many tests, that non-tensioned pairs of twisted wires of 0.2 in. ensure satisfactory bond resistance; this appears to be the case also with wire of 0.276 in. diameter, although it has not yet been conclusively proved, but the outcome is likely to be favourable.

FATIGUE TESTS

Whilst the static tests showed already the suitability of pre-tensioned 0.276 in. bonded wire, fatigue tests carried out in the summer of 1954 indicated the extraordinary resistance of such prestressed beams. All the beams had a length of 15 ft. 6 in. and to two beams 1,000,000 repetitions of loading were applied between loads corresponding to a compressive stress of 10 p.s.i. and a nominal tensile of 600 p.s.i. Previously the beams were deliberately loaded until cracks had developed. On removal of the load the fine cracks became entirely invisible after completion of the fatigue tests. In subsequent static tests the wires fractured under the maximum calculated load.

In one further test 1,000,000 repetitions were carried out as before, but in a non-



The Amsler fatigue machine of the Railway Research Department, Derby, with a beam under loading.

cracked state. Afterwards nearly 9,000,000 repetitions were applied in a cracked state. The lower limit loading corresponded to a compressive stress of 270 p.s.i. and the upper limit to a nominal tensile stress gradually increasing from 650 to 1,270 p.s.i. when the load corresponded to two-thirds of that at which the maximum was obtained in a static loading test by fracture of the wire. The cracks became entirely invisible at zero stress up to and including the 8,000,000th repetition. A detailed report of these tests will be published later by the British Transport Commission.

Thus these tests have conclusively proved the suitability of 0.276 in. wire for pre-tensioning, save only for the qualification about single untensioned wires and suitable minimum spacing.

It must be pointed out that smooth wire was employed and the condition will be improved if indented wire is used.

The arrangements for testing were all made under the direction of Mr. J. I. Campbell, MICE, Chief Civil Engineer, British Railways, Eastern Region, until January 26 last.

TESTING CONCRETE

The Ultrasonic Pulse Method

UNTIL RECENT YEARS the only way in which the physical characteristics of concrete and the changes brought about by ageing and other causes could be determined was by tests to destruction carried out on specially prepared specimens. These tests were useful, but not entirely satisfactory because of variations in compacting conditions in specimens and structure. The need of the engineer for a non-destructive technique for concrete testing was met by the development, at the Road Research Laboratory, of the ultrasonic pulse method, equipment for which is now manufactured in this country and marketed both here and abroad. The Road Research Technical Paper No. 34 "Testing Concrete by an Ultrasonic Pulse Technique," recently published by the Stationery Office for DSIR (price 2s. 6d.), describes an extensive investigation of the scope of the method.

The paper describes the ultrasonic equipment, which uses two transducers placed on opposite faces of the concrete being tested. Pulses are timed electrically as they pass from one transducer to the other through the concrete and the time of transmission indicates the characteristics of the concrete and the presence of internal cracks.

A study has been made of the various factors, such as age, nature and proportions of the mix, moisture content, the presence of mild-steel reinforcing bars and so on, on the transit time of the pulses between the transducers. The effect of these factors on the ultrasonic testing technique is discussed.

One of the advantages of this method of testing is that it can be applied to concrete *in situ* and it can detect any deterioration due to weakness or poor compaction. The technique can be applied, for instance, to determine the strength of such structures as prestressed units and reservoir walls. Examples are given of the practical applications of the method.

The use of the ultrasonic technique for testing road surfaces is also dealt with.

CONCRETE AND SOIL-CEMENT ROADS

Four New Publications

THE Cement and Concrete Association, 52, Grosvenor-gardens, London, SW1, has prepared a series of technical booklets describing the design and construction of concrete and soil-cement roads.

It is now more than 15 years, the Association points out, since the British highway engineer has had an opportunity of building new roads of any importance. This period has given him an opportunity of studying the performance of older roads and assimilating the lessons to be learnt from research.

Concentration on the past and on research alone without concurrent full-scale practice is leading to an over-emphasis on problems which might well dissolve or become much less important in the atmosphere of actual construction.

It is thought, therefore, that the time has come when the lessons learnt from past mistakes and from research should be set down in a form suitable for application in the field, and the purpose of the Association in preparing these booklets has been to outline the latest methods of design and construction in as straightforward and definite a way as possible so that the highway engineer, faced with the problem of building a road, can form a picture of just how the work should be carried out.

Four booklets are being issued at the present time dealing with concrete roads and one with soil-cement. The concrete road booklets are No. 1—Earthworks, Sub-grades and Bases; No. 2—Slab Design; No. 3—Design of Mixes; and No. 4—Construction Methods. Further booklets dealing with specialised aspects of concrete road construction, for example, on housing estates, and specifications incorporating the recommendations in the booklets are being prepared. The booklet on soil-cement roads is an entirely new version of the previous booklet issued by the Association some years ago.

The information contained in the booklets has had to be obtained from a number of sources including the experience gained in other countries where road construction has not been at a standstill, but a large proportion of the data given has been obtained through the co-operation of the Road Research Laboratory.

Given below are brief synopses of the five booklets:

Concrete Roads: 1, *Earthworks, Sub-grades and Bases.*—Influence of soil conditions on design. Selection of soils and base materials—soil surveys. Compaction of soils and base materials—compaction plant—control of soil compaction. Drainage—during and after construction. Effect of vegetation. Action of frost.

Concrete Roads: 2, *Slab Design.*—Factors producing stress. Choice of concrete thickness. Choice of base thickness. Frost damage. Reinforcement. Joints—the need for joints—expansion joints—contraction or dummy joints—construction joints—longitudinal joints and slab widths—joints at the end of the day's work—sealing compounds—arrangement of joints—spacing of joints. Joint layout at road junctions.

Concrete Roads: 3, *Design of Mixes.*—Properties required of concrete for road construction. Effect of mix proportions on the properties of concrete. Selection of strength required. Selection of workability required. Selection of concreting materials—cement—aggregates. Methods of specifying concrete mixes. Selection of mix for the small job. Mix design for larger works. Trial mix procedure. Quality control—control of materials—control of batching—concrete control tests—site supervision. Appendix—list of equipment for site testing.

Concrete Roads: 4, *Construction Methods.*—Road construction for smaller works. Organisation—Central batching and mixing—Ready Mixed and truck mixed concrete—Choice of plant—Formwork and form setting—Spreading Concrete—Reinforcement—Compacting and finishing—Joints.

Fully mechanised construction. General considerations — planning — supplies — Organisation—Batching and mixing plant—Transporting concrete—Forms and formwork—Spreading—Reinforcement — Compacting and finishing machines—Joints—Surface finishing—Sealing of joints—Curing.

Soil-Cement Roads.—Development and present use. Principles. Soils—soil surveys—soil samples—soil tests. Tests to determine proportion of cement. Construction—mix in place method—pre-mix or stationary plant method—travelling plant method. Surface treatment. Output. Costs. Maintenance and repairs. Uses of soil-cement.

MINERAL WORKINGS

Bedfordshire Survey and Report

A DETAILED REPORT entitled "Mineral Workings in Bedfordshire" concerning the mineral industries in the county, the reconciliation of their land requirements with those of other interests and with amenity and suggestions for the after treatment of excavated land, has been prepared by Mr. D. R. Ball, BA, AMTPI, assistant in the Bedfordshire County Planning Department. The report was presented to the County Planning Committee.

Each of the mineral industries is dealt with in turn and examined in the light of its effects on future land use. This involves a discussion not only of rates of land consumption and land requirements, but also of the economic and technical factors which influence the operator's choice of an area to be worked, and the conflicting claims on the land which must be carefully weighed against those of the mineral industry before deciding whether a given area should be worked or used for some other purpose. At the same time an indication of the depth and condition of the various workings is given.

The second part of the report, after discussing the various methods of after-treatment available and the factors influencing choice of method, outlines the problems arising and reviews the progress already made. In the final chapter, detailed proposals for after-treatment are advanced, by which it is believed the productivity of the maximum possible area of excavated land can be restored.

The conclusion to the report states that out of a total area of 7,837 acres already worked or in respect of which planning permission to work minerals has been granted, the plan of after-treatment outlined in the report provides for the restoration to some productive use of approximately 1,530 acres by filling, 2,046 acres by levelling and 154 acres by afforestation, giving a total of 3,730 acres. In addition approximately 3,860 acres which are incapable of complete restoration will be flooded and landscaped.

OFFICIAL NOTIFICATION

Imports of Dollar Hardwood

THE establishment of a quota of £3m. fob for imports of dollar hardwood was announced by the Board of Trade on January 11, 1955; and details of the arrangements for the issue of licences to users of hardwood were given in Notice to Importers No. 715, of February 25, 1955. Details of the arrangements for the issue of licences to importing merchants are now given in Notice to Importers No. 720 dated March 25, 1955.

RESIDENTIAL COURSE FOR BUILDERS' FOREMEN

Eastern Federation's New Venture

WHAT is believed to be the first residential course for builders' foremen in this country was held at Belstead House, near Ipswich on March 11, 12 and 13, under the auspices of the Eastern Federation of Building Trades Employers. Some 30 general foremen attended the course representing 19 firms not only from Ipswich and East Suffolk but also as far afield as Luton, Chelmsford, Clacton and Colchester. The Federation states that the demand for places was so great that there is already a big enough waiting list to justify a further similar course.

Welcoming the members of the course at the first session on March 11, when he took the chair, MR. B. T. HENMAN, president, Eastern Federation, expressed the hope that this pioneer effort would be the forerunner of other similar courses not only in East Anglia but in other parts of the country as well.

Subsequently MR. D. E. WOODBINE PARISH, FIOB, MIIA (chairman, Standing Committee for the Training of General Foremen), spoke on "The Principles of Management." He said that this was the first residential building foremen's course not just in Britain but in the whole of Western Europe, and its success would be closely watched. On this pioneer venture at Ipswich the Eastern Federation was to be warmly congratulated.

Continuing, Mr. Parish said that building to-day was rapidly becoming more specialised, and the great need was to attract men of high calibre willing to accept responsibility.

Management was concerned with the whole range of functions necessary to translate needs into productive action. It meant responsibility for controlling the work of others, and the secret of success was to make people who worked for you feel good. Management was an art and a science and the need for it arose from associations. The five essentials of productive action were: something to be done; people to do it; materials and tools to do it with; a site; and an occasion. This all needed co-ordination or management, the components being men, materials and machines.

To make men feel good there must be security; recognition; fair wages; an opportunity to advance; competent direction and supervision; a voice in matters of mutual interest and a square deal. The cycle of enterprise was deciding, planning, preparing, operating and reviewing. There was a tremendous need for logic—hard clear thinking and applied common sense.

DISCUSSION METHODS

THE CHAIRMAN then outlined the discussion method which would be employed at each session. There would be five groups with six foremen in each, a leader being appointed for each session. The Federation's director would, during the course of each address, prepare several questions for discussion. The findings of each group would be reported and if necessary reviewed at the end of the discussion period.

The second session on Saturday, March 12 on "The Responsibilities of the General Foreman in relation to all parties to the Building Contract," was also addressed by MR. PARISH (Mr. B. T. Henman in the chair). In drawing attention to the run-down of the building industry during the war to one-third of its previous size, Mr. Parish outlined the problem of the post-war build-up in a period of shortage and restriction. This called for high managerial skill and to-day we were witnessing the second stage of the industrial revolution—a managerial revolution. The problem was that of co-ordinating the agents of production for the best possible results. Foremen, he said, had three main functions:—

(a) *To organise work.*—This required sound practical and theoretical knowledge: a full appreciation of technical, legal and industrial considerations: a clear understanding of relationships, duties and loyalties: high moral integrity.

(b) *To manage men.*—This called for discussion and delegation: clear and concise instructions; proper use of authority; praise as well as blame; fairness; careful planning; detailed records, such as a foreman's diary.

(c) *To develop methods.*—Waste should be eliminated; drudgery reduced; new methods evolved.

PERSONNEL MANAGEMENT

"Personnel Management and Welfare" was the subject of the third session on the Saturday afternoon (Mr. R. E. Perrott, MIOB, senior vice-president, EFBTE, in the chair). The speaker was MR. S. T. BOULLIER (deputy personnel manager, John Laing and Son, Ltd.), who said that personnel management should exist in every firm; it should not be confined to large firms. In the post-war period there had been a change in attitude and outlook due not merely to full employment but to an advance in social philosophy. Leadership called for the fair exercise of discipline and authority, making best use of a man's ability and integrity.

Speaking on the industrial agreement, Mr. Boullier urged that difficulties should be anticipated and complaints taken seriously. The personnel manager's job was to avoid disputes not win them. Accident prevention, apart from being wholly desirable, was a legal requirement. Statistics from the speaker's own firm showed what could be achieved by an accident prevention drive.

The fourth session, on Sunday, March 12, was addressed by MR. A. G. BUCK, AMIIA (member of Standing Committee for Training of General Foremen), on "Site Organisation." The chair was taken by Mr. Harvey G. Frost, OBE, FIOB, the national president.

Mr. Buck made available to members of the course extensive notes on site organisation which he defined as the art of arranging schemes of routine necessary to carry out a building contract. The general foreman, he said, must adopt the attitude of mind that he is entirely responsible for everything connected with the contract under his control. The problems to be dealt with must be broken down and fully understood. An eye must be kept on costs and the general foreman should know exactly what points to look for.

MR. FROST said that he was impressed by the enthusiasm and high level discussion displayed. Friendships had been made and views exchanged, an indication that a further and closer link was called for, perhaps through Foremen's Associations.

At the final session on the Sunday afternoon (Mr. C. W. Cubitt, FIOB, in the chair), MR. W. R. TOOGOOD (member, Standing Committee for Training of General Foremen), spoke on "Site Administration."

Mr. Toogood said that the qualities required of general foremen in fulfilling their managerial function were personality; specialised technical training and executive experience; training in principles; and technique of administration. In site administration there were two main fundamentals (a) static—forecasting; planning; organisation. (b) human—co-ordination; command; control.

The problems of human relations in building contracts were then reviewed. In planning contracts the first step was, after careful thought, to prepare programme and progress schedules. Greatest economy in the use of plant and labour should be exercised. A weekly programme of work provided a target for the site. It was particularly important to secure from architects prompt detailed drawings and instructions and approvals where needed. The records to be kept by general foremen were then outlined, the speaker concluding with a review of the contract documents.

SUMMING UP

Briefly reviewing the week-end's work, MR. R. W. PORTER, MBE, director of the Eastern Federation, said that the keynote was the importance of a wide appreciation and knowledge of the principles of management by general foremen. The qualities required of foremen were many and he felt that the course had made some small contribution to building efficiency in East Anglia. A printed report would be prepared and the successful pattern established would be the basis for further similar courses. The Federation would give every possible help in forming Foremen's Associations where these were needed.

ALUMINIUM'S CENTENARY

The aluminium industry is to present a progress exhibition from June 1 to 11 at the Royal Festival Hall, not only to mark the centenary of aluminium as a commercial metal but to demonstrate how the present output and experience already gained are being applied to every industry in increasing measure.

PRIVATE STREET WORKS

Frontagers' Liability for Laying Footpaths

[From a Legal Correspondent]

RICHMOND (Surrey) Corporation v. Robinson and Others was a case of interest to builders as it originated from development by certain owners and developers of land by Park Estates, Ltd. There was a highway known as Sandy-lane which was 39 ft. 10 in. wide, and the Council made an order under the Public Health Act 1925 S.30 (I) declaring part of Sandy-lane to be a new street for the purposes of the application of their by-laws, which prescribed a width of 36 ft.

The owners of land on the south side were Park Estates Ltd., and they sold their land in plots but after arrangement with the council the boundary fences of the plots were set back 14 ft. from the lane so as to leave a strip of land between the fences of the plots and the lane. The plots were sold but no part of the strip was conveyed to any of the purchasers. The part nearest the lane had been planted with a hedge of trees and shrubs.

There were in all 17 frontagers and in course of time a footpath had been worn between the frontagers' premises and the carriageway. The Richmond Council approved an estimate to carry out private street works on this strip and the proposed works consisted of a foot pavement of a width of six feet on the strip between the boundary fences and the hedge. The frontagers objected, and when the justices at petty sessions upheld the apportionment they appealed to the Appeals Committee of Surrey Quarter Sessions who reversed the decision. The Divisional Court of the High Court on a case stated by quarter sessions upheld the view of the appeals committee.

APPLICATION OF 1835 ACT

It is a valid objection under Section 7 of the Private Street Works Act 1892 clause (b) that the street or part of the street is a highway repairable by the inhabitants at large. Before 1835 it was generally accepted that if a street was used by the public it was deemed to have been dedicated by the owner and there was implied acceptance by user. But it was felt that the public were being asked to maintain highways which became accepted easily for the use of one or two individuals, and by S.23 of the Highway Act 1835 before a highway became maintainable by the inhabitants at large the owner had to give three months' notice of dedication, and among the other requirements he had to make up the road in a substantial manner.

The question in the Richmond case was whether S.23 applied to a footway. It was held that it did not. S.5 of the 1835 Act in the definition of highway made a distinction between a road and a footway by saying the word "highway" included both. Therefore, the Court made the distinction that S.23 only referred to a road, occupation-way, a driftway or a horsepath. Footways were not included and therefore, having been accepted by user, without any need of formal notice and making up under S.23 of the Highway Act 1835, were repairable by the inhabitants at large and the cost could not be apportioned under private street works procedure.

If, therefore, any builder proposes to or has made a similar arrangement to leave a strip of land it may assist him to reassure the purchasers that they are not likely to be involved in large private street works expenditure on this account.

SOVIET HOUSING

Reliance on Prefabricated Concrete Components

[From a Correspondent]

A REPORT published recently in the USSR, on housing in the Soviet Union, states that 126m. sq. yds. of new living space will be completed by the end of this year, the last year of the current five-year plan. All building work of any scale in the USSR is undertaken by local councils, state enterprises and institutions. Thus, housing estates and blocks of flats are the responsibility of the civic authorities.

Individuals can however purchase houses direct from the Ministry of Trade. These houses are usually of standard brick or wood, of two or three rooms each, besides auxiliary rooms, with all amenities: heating, gas, water, sewers, and electricity. All housing construction, regardless of who does the building, is carried out in conformity with the city building and improvement plan. Designs of residential buildings are examined and approved either by the Architectural and Building Councils functioning under the office of the Town's Chief Architect or by district architects. The latter usually deal with individual houses. Designs for very large blocks costing over 5m. roubles are examined and approved by the State Committee for Building Construction of the USSR Council of Ministers. Rent is usually about 4 per cent. of the tenant's wages.

EXTENSIVE MECHANISATION

Soviet building is becoming extensively mechanised. In Moscow, the Report states, in the Peshchannaya-street area an immense section was built up in a short time through extensive mechanisation of building processes. In 1951, 250,000 sq. yds. of living space were built there. The total area put up so far amounts to nearly 722,000 sq. yds. Each house in the area has its own distinctive architectural cast. The same system has been used in construction projects in Leningrad, Magnitogorsk, Stalinsk, Minsk and many other towns.

Wall blocks are used to a great extent and by the use of cranes, buildings can be assembled from the prefabricated state. The first residential buildings of five to eight storeys high, built from large blocks, date back to pre-war days. Since the end of the war in addition to blocks, large panels in housing construction have also entered a new stage of development. Between 1948 and 1954 whole streets of four- to six-storey buildings have been erected in this way in Moscow, Kiev, Magnitogorsk, Zaporozhye and other towns.

To ensure further technical progress in the building industry, huge factories are being put up and existing plants are being reconstructed. It is interesting to note that the output alone of the Lyubertsi and Moscow reinforced concrete component factories, now nearing completion, is over 313,920 cu. yds. of reinforced concrete parts a year, which is enough to build well over 7,500,00 sq. ft. of living space. The manufacture of large reinforced concrete part is completely mechanised—the conveyor line method being used. The new factories turn out columns, floor panels, main beams, wall panels, flights of stairs, and landings. Factories for the production of sectional wooden houses and standard parts for building houses, have been built at Vitebsk, NovoVileika, Levsha, Rechitsa, Bryansk, Stalingrad, and many other places.

Great attention is also paid to facing materials in the USSR. The use of ceramics is now widespread in the building industry. Known since ancient times, ceramics have great endurance, and besides being an excellent building material are also decorative. Kiev, for instance, is being clad in ceramics. Its main street is said to be a wonderful example of Soviet architecture. Widened to nearly 250 ft., this street is lined with fine big residential buildings. Local stone, is, of course, used a great deal and in some Republics, the main materials used being marble, travertine, trachyte, conglomerate, and tufa. Tufa is used mainly in Armenia where it is found in thirty different hues.

BUILDING IN HOT REGIONS

In the southern part of the Soviet Union housing construction has its own specific features arising out of the different natural climatic conditions. Cross-ventilation is used in the layout of flats in these territories where the temperature reaches 105 deg. F. in the shade. Ceilings are high, the minimum height being 15.9 ft. as against 9.8 ft. in the central areas. Buildings do not exceed five storeys in height owing to earthquake disturbances. Apart from many verandahs, loggias and balconies, cornices of light construction extend far out, which protect the building from the heat.

In the country areas, collective farms no longer have to fear "The Red Rooster," the peasants' name for fire which before 1917 wiped out 200,000 peasant farmsteads every year. Strong buildings are being constructed in these country villages as well as small blocks of flats. To encourage extensive private building of individual houses it has also been decided to grant, over three years, loans amounting to 450m. roubles each year—up to 12,000 roubles being granted to an individual house builder, for a term of ten years. Within the next five years the Soviet Union hopes to get over the worst of its housing problems. Twenty years from now it is estimated that everyone will have decent living accommodation.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchants warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	3	10
Pit Sand	,,	1	2	11
Washed Sand	,,	1	4	5
¾ in. Shingle	,,	1	0	9
¾ in. Broken Brick	,,	1	0	0
Pan Breeze	,,		10	3
Fine or Coarse Foamed Slag Aggregate	per ton	3	0	9
2 yds. of fine and 2.6 yds. of coarse per ton				

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	4	16	6
1 to 6 tons, site	,,	5	5	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	4	6
1 to 6 ton do. site	,,	5	13	6
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots ...	,,	6	18	0
Other colours according to colour.				
In 4-ton lots from 211s. 9d. to 435s. 9d. per ton.				
White Portland Cement	,,	12	17	0
Under 1 ton	per cwt.		15	4
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	9	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £9 4s. 3d. to £10 17s. 9d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	0	9
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	2	3

BRICKS

		£	s.	d.
Full Loads.				
First Hard Stocks	per 1,000	11	7	0
Second Hard Stocks	,,	10	11	0
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C.				
District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose do.	,,	6	13	0
Sandfaced	,,	7	13	0
Best Blue Pressed Staffs (London Stations) ...	,,	24	19	6
Do. Bullnose (London Stations)	,,	25	13	6
Blue Wire Cuts (London Stations)	,,	22	11	0
Midhurst Lime Bricks (London Sites)	,,	10	3	0
Uxbridge Whites (London Sites)	,,	9	1	6
Special Purpose Sandlime Bricks (London Sites) ...	,,	7	14	0
2½ in. Best Stourbridge Fire Bricks (London Stations)	,,	24	6	0
3 in. do. (London Stations)	,,	29	3	3
2½ in. Machine - made Sandfaced Red Facings (London Sites)	,,	13	19	6
2½ in. Machine-made Multi Red Facings (London Sites)	,,	14	4	6
2½ in. Hand-made Sandfaced Red Facings (London Sites)	,,	14	11	0
2½ in. Hand-made Sandfaced Multi-Colour Facings (London Sites)	,,	14	11	0
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London Sites)	,,	17	5	6
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London Sites)	,,	17	5	6
Rubber Bricks for gauged arches (London Sites) ...	per 1,000	41	10	0
2½ in. Surrey Clamp Burnt Multi Stock Facings (London Sites)	,,	13	6	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London Sites)	,,	14	4	6
Glazed Bricks (London Sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 7½% for Best quality and plus 7½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area.

	Minimum lorry loads.		£	s.	d.
HOLLOW CLAY PARTITION BLOCKS (Keyed)					
*2 in.	140 yds.	per yd. sup.		4	3
*2½ in.	140 yds.	,,		4	6
*3 in.	120 yds.	,,		5	2
BUILDING BLOCKS (Keyed)					
*4 in. (6 cavity) ...	95 yds.	,,		6	7
6 in. (8½" × 5½") ...	1250 Blocks	per 1000	25	14	0
*Half blocks at no extra charge.					
CLINKER CONCRETE					
2 in.	100 yds.	per yd. sup.		3	7
2½ in.	85 yds.	,,		4	2
3 in.	75 yds.	,,		5	0
4 in.	55 yds.	,,		6	2
CRANHAM					
2 in.		,,		6	8
2½ in.		,,		7	4
3 in.		,,		8	7
4 in.		,,		10	7
4½ in. Load bearing quality		,,		11	8
FLOOR BLOCKS and FILLER TILES					
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	32	11	0
4 in. do.		,,	34	18	0
5 in. do.		,,	41	11	0
6 in. do.		,,	46	16	0
7 in. do.		,,	56	18	0
8 in. do.		,,	66	14	0
10" × 3" × ⅞" Filler Tiles in multiples of 10 tiles		per 1,000 multiples	56	2	0
12" × 3" × ⅞" do.	do.	,, ,,	63	17	0
10" × 4" × ⅞" do.	do.	,, ,,	69	14	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 Pieces under 2 tons	Under 100 Pieces under 2 tons
Best Quality	+67½%	+97½%	+107½%
B.S.S. Best do.	+10% +67½%	+10% +97½%	+10% +107½%
Tested Quality	+37½% +67½%	+37½% +97½%	+37½% +107½%
B.S.S. Tested do.	+47½% +67½%	+47½% +97½%	+47½% +107½%

		£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths)	per 1,000	10	13	6
4 in. do.	,,	14	2	0

STONE

		£	s.	d.
Bath Stone—				
Monks Park	per ft. cube		7	10
St. Aldhelm Box Ground	,,		8	10
Delivered in railway trucks at South Lambeth B.R. Western Region				
Doulting Stone Random Blocks. Delivered London area	,,		8	7
Beer Stone. Delivered London area	,,		8	0
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region	,,		8	1½
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stooled cills	per ft. cube	3	4	3
12 in. × 6 in. do. do.	,,	2	6	0
12 in. × 3 in. Plain coping, twice throated ...	,,	1	15	4
12 in. × 3 in. Weathered and twice throated coping	,,	2	7	4
14 in. × 6 in. do. do.	,,	2	2	8
4½ in. × 9 in. Plinth, rubbed on top and face ...	,,	1	18	1
3 in. sawn two sides Slabs, random sizes	per ft. sup.		6	9

STONE—*continued*

		£	s.	d.
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ...	per ft. cube	1	3	5
Do. do. fair one edge for fair faced brickwork		1	7	10
Hard York—				
12in. × 2in. Square Steps, rubbed on top and edge	per ft. run		8	2
14 in. × 3 in. Round-nosed Steps, rubbed on top and front	per ft. cube	2	3	8
12 in. × 6 in. Plain Steps, rubbed top and front ...	,,	1	18	3
2 in. Rubbed and Jointed Paving, given sizes ...	per ft. sup.		7	10
2 in. Sawn Paving, edges squared, in random sizes	per yd. sup	2	13	10

TILES and PANTILES

Delivered London area by road in 6 tons or over per 1,000

Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	8	0
Hand-made Pantiles Berkshire district	47	10	0
Hand-made Double Roman Bridgwater district	58	13	6
Hand-made 10½ × 6½ tiles Berkshire district	13	1	9
Machine-made 10½ × 6½ Staffordshire district	13	8	9
Hand-made Hip and Valley tiles per doz.	1	8	9
Machine-made Hip and Valley tiles do.	1	6	6
Concrete tiles 10½ × 6½	7	14	6
do. Interlocking (49S)	18	9	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual

24 × 12	113	0	4
22 × 12	93	16	0
22 × 11	84	15	0
20 × 12	79	19	6
20 × 10	74	12	0
18 × 10	53	18	9
18 × 9	47	5	6
16 × 10	44	7	0
16 × 8	34	10	6

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—						
Joinery quality	Ex. Wharf	per standard		£110 to £130		
Carcassing quality	do.	,,		£98 to £102		
1 in. Tongued and Grooved Flooring	do.	,,		£108	0	0
Hardwood—						
Mahogany—African S.E. ...	do.	per ft. cube		1	10	0
do. Honduras do. ...	do.	,,		3	5	0
Oak European do. ...	do.	,,		2	5	0
do. Japanese do. ...	do.	,,		2	10	0
do. English Logs sawn	do.	,,		1	15	0
Teak 8 in. average S.E.	do.	,,		3	5	0
Walnut African Logs sawn	do.	,,		1	5	0

DOORS (in Lots I-II)

Delivered London area.

1½ in. 4 Horizontal Panel Pattern 4 in. deal				
2 ft. 0 in. × 6 ft. 6 in.	each	1	12	0
2 ft. 3 in. × 6 ft. 6 in.	,,	1	13	0
2 ft. 6 in. × 6 ft. 6 in.	,,	1	14	0
2 ft. 9 in. × 6 ft. 6 in.	,,	1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	,,	2	9	0
2 ft. 9 in. × 6 ft. 6 in.	,,	2	11	6
2 in. Panel, top panel open. Pattern 2 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	,,	2	1	9
2 ft. 9 in. × 6 ft. 6 in.	,,	2	3	6

SUNDRIES

Delivered London area

1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton)	per yd.		5	8
1½ in. do. (67 yds. to 1 ton)	,,		7	4
2 in. do. (52 yds. to 1 ton)	,,		8	11½
2½ in. do. (45 yds. to 1 ton)	,,		10	3
3 in. do. (39 yds. to 1 ton)	,,		11	5½
Quantities under 1 ton add 1d. per ½ in. of thickness.				
½ in. imported insulation Board, quantities over 5,000 sq. ft.	per 100 sq. ft.	2	2	6
¼ in. Hardboard do.	,,	2	1	6
⅛ in. do. do.	,,	3	2	6
⅛ in. Asbestos Flat Building Sheets ...	per yd. sup		3	2
Roofing Felt, 1-ply	,,		1	6
do. 2-ply	,,		1	9
Best Scotch Glue, in slabs	per ½ cwt.	5	0	0
do. pearl	,,	5	5	0
Croid Glue	28 lb.	2	6	0
Cut Nails 3 in. (1-ton lots)	per ton	58	5	0
do. 4 in. and up (1-ton lots)	,,	54	15	0
Wire Nails, 3 in. (4-cwt. lots)	per cwt.	2	16	3
do. 4 in. and up (4-cwt. lots)	,,	2	12	9

METALS

STEEL JOISTS, ETC.

Basis Joists—				
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area	per ton	39	0	0
Extra for sizes				
3 in. × 1½ in., 4 in. × 1½ in.	,,	3	10	0
3 in. × 3 in.	,,	2	10	0
4 in. × 3 in., 10 in. × 4½ in.	,,	1	10	0
5 in. × 2½ in., 5 in. × 3 in.	,,	1	15	0
4½ in. × 1½ in.	,,	3	5	0

5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. ...	per ton		15	0
6 in. × 3 in. 24 in. × 7½ in.	,,	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. ...	,,	1	5	0
9 in. × 4 in. 10 in. × 5 in.		1	0	0
12 in. × 5 in. 22 in. × 7 in.				
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in.				
14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in.				
15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in.	,,		10	0
16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in.				
18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in.				
Steel angles average price	,,	40	15	0
Steel tees average price	,,	41	15	0
Fabricated work delivered London—				
R.S. Joists cut and fitted	,,	55	10	0
Compound girders	,,	61	0	0
Stanchions	,,	66	10	0
Compound stanchions	,,	70	5	0
In Roof Work—Trusses and Purlins	,,	83	0	0
Average prices not for awkward work.				
Mild Steel Ferro-Concrete bars to BSS785 ex London				
Stock ⅜ in. diam., and upwards	,,	40	6	0
¼ in. diam.	...per ton extra	4	7	0
⅛ in. do.	,,	3	7	0
⅜ in. do.	,,	2	9	6
½ in. do.	,,	1	12	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts :

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A NET		
Class B + 9½%	Light + 24½%	Malleable List — 35% + 40%
Class C + 25½%	Heavy + 32%	
Black—		
Class A — 21½%		
Class B — 11%	Light + 11½%	Malleable List — 35%
Class C + 1½%	Heavy + 19½%	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/3½	2/11	/10
3½ in.	3/7	3/2	/10
4 in.	4/7½	3/7	1/3
4½ in.	5/1	4/-	1/6
5 in.	5/8	4/4	1/9

C.I.O.G. GUTTERS

3 in.	4/3	3/10	1/-
3½ in.	4/9	3/10	1/3
4 in.	5/3	4/-	1/6
4½ in.	5/8	4/7	1/9
5 in.	6/2½	5/3	2/-

C.I. RAIN-WATER PIPES

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	7/0½	3/7	5/2
2½ in.	7/0½	4/-	6/11
3 in.	7/11	5/-	7/6
3½ in.	9/-	5/11	9/-
4 in.	10/5	7/2	10/8

L.C.C. COATED SOIL PIPES

2 in.	8/-	6/2	7/6
2½ in.	8/5	6/10	9/4
3 in.	9/5½	7/6	11/1
3½ in.	10/7	9/4	12/11
4 in.	12/0½	10/5	15/3

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated 1st February, 1955, NET and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. COATED DRAIN PIPES

	In 9-fts. cwt. qr. lb.	per yd.	Bends	Branches
4 in.	1 1 17	24/10	17/3	30/6
6 in.	2 0 1	36/10	36/-	62/-

ASBESTOS RAIN-WATER PIPES AND FITTINGS

All less 17½ per cent. discount.

		2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths	...per yd.	3/9	4/-	4/10	6/5
Shoes	... each	2/5	2/8	3/2	4/3
Single Branches	... ,,	3/9	4/6	5/4	7/6
Bends square or obtuse	,,	2/8	2/11	3/9	5/4
Swan Necks 4½ in. proj.	,,	2/11	3/9	4/3	5/11
do. 6 in. do.	,,	3/2	3/9	4/10	6/5

ASBESTOS O.G. GUTTERS AND FITTINGS

		4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	...per yd.	3/7	3/11	4/8	5/7½
Drop ends	each	2/10	3/4	3/10	4/7
Stop Ends	,,	/10	/11	1/-	1/2
Angles	,,	2/11	3/5	4/1	4/10
Nozzles	,,	2/10	3/4	3/10	4/7
Union Clips	,,	1/5	1/8	2/1	2/5

ASBESTOS HALF-ROUND GUTTERS AND FITTINGS

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	...per yd.	2/6	2/11½	3/0½	3/7	5/-
Drop ends	each	2/1	2/5	2/8	2/11	4/3
Stop ends	,,	/9	/10	/11	1/-	1/2
Angles	,,	2/5	2/8	2/11	3/2	4/3
Nozzles	,,	2/1	2/5	2/8	2/11	4/3
Union Clips	,,	1/-	1/1	1/2	1/4	2/-

METALS—*continued*

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	41 17 6
Mild Steel Bars	37 14 0
Mild Steel Hoops	39 1 0

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	49 6 0
24 gauge	51 16 0
26 gauge	54 16 0
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	56 6 6
24 gauge	59 16 6
26 gauge	65 1 6
Galvanised Flat sheets C.R. and C.A.—	
20 gauge	57 16 6
24 gauge	61 6 6
26 gauge	66 11 6

Plumbers' Brass Work, Copper, Zinc, etc.

Delivered in London area.

All per doz.	M.O.H. ½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	77/-	114/6				
Toilet bib cocks for iron ...	99/-	142/-				
Screwdown stop cocks for iron	66/-	95/9	188/-	323/6	462/-	815/-
do. with two unions for lead	89/-	132/-	234/4	419/-	554/6	1234/3
Double nut boiler screws ...	16/6	23/3	42/-	43/-	59/6	83/8
Heavy Croydon ball valves ...	68/3	155/3	237/7	433/6	614/-	
Plumbers' union brass lead to iron	17/4	21/-	34/9	60/6	74/6	145/3
	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	29/9	36/4	52/9	82/6	105/6	137/6
Brass sleeves		27/6	27/6	49/6	66/-	67/-
		1½ × 6 lb.	1½ × 6 lb.	2 × 7 lb.		3 × 7 lb.
Lead P. trap with brass cleaning screws		63/6	79/6	127/-		217/3
Lead S. trap do.		77/-	95/-	156/3		281/-

	s. d.
Solder	
Plumbers' ... ... per lb.	3 5
Tinmen's ... ... ,,	4 2
Blow pipe ... ... ,,	4 3

Copper tubes BSS 659/1944 on the basic price of 40¾d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.	Total per lb. d.
⅛ in. × 19 gauge ...	13	53⅞
¼ in. × 19 ,, ...	11⅜	52¼
1 in. × 18 ,, ...	9⅞	50¾
1¼ in. × 18 ,, ...	9¼	50⅛
1½ in. × 18 ,, ...	9¼	50⅛
2 in. × 17 ,, ...	10⅞	51⅜

	£ s. d.
Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras ... ... per ton	418 15 0
Sheet Zinc 10 gauge (25 SWG) 5 cwt. lots upwards per cwt.	8 6 0
do. 12 gauge (23 SWG) do. ... ,,	8 4 0
do. 14 gauge (21 SWG) do. ... ,,	8 3 0
Brass tubes basic price, plus gauge and manufacturing extras ... ... per lb.	2 8¼

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

	£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards per ton	140 5 0
Lead Water Pipe in coils ... ... ,,	141 10 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. ... ,,	143 0 0
do. over 4 in. dia. ... ... ,,	145 0 0
Lead Gas or Untinned Compo pipe ... ... ,,	143 0 0
Extras over Basis for quantities under 1 ton	
5 cwt. and under 1 ton ... ... per cwt.	2 0
3 cwt. do. 5 cwt. ... ... ,,	4 0
1 cwt. do. 3 cwt. ... ... ,,	6 0
Smaller quantities than 1 cwt. priced specially.	
Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.	
Allowance for Old Lead, collected £100 5s. 0d. per ton weighed at buyer's works.	

PLASTER, etc.

	£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site per ton	7 6 6
do. White do. do. ... ,,	7 14 3
Sirapite Coarse do. do. ... ,,	7 9 0
do. Fine do. do. ... ,,	7 17 0
Blue Lias Lime in 6-ton loads ... ... ,,	6 9 6
Hydrated Lime do. ... ... ,,	5 12 6
Lump Lime do. ... ... ,,	5 2 0
White Keen's or Parian Cement in 1-ton loads ... ,,	10 4 0
Pink Keen's or Parian Cement in 1-ton loads ... ,,	9 18 6
Granite Chips in 6-ton loads ... ... ,,	2 6 3
Hair ... ... per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... per yd.	2 3
1,200 yds. ... ... ,,	2 2¼
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ½ in. thick, 600 yds. and over in one delivery. Delivered site ... ... ,,	2 6
1,200 yds. ... ... ,,	2 5½

PAINT AND DISTEMPER

Delivered London area.

	£ s. d.
Ceiling Distemper ... ... per cwt.	1 7 6
Washable Distemper ... ... ,,	5 5 0
Gloss Paint ... ... per gal.	2 10 0
Snowcem cement paint (in 1 cwt. drums) ... ... per cwt.	3 11 0

Lead Products and Oils.

	£ s. d.
Ground White Lead, 1 cwt. kegs ... ... per cwt.	8 18 0
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins per gal.	3 2 0
Genuine Red Lead, Dry, 1 cwt. keg ... ... per cwt.	6 19 3
Genuine Linseed Oil Putty, 1 cwt. keg ... ... ,,	2 11 0
Size XD quality, 28 lb. ... ... per tin	9 0
Raw Linseed Oil (5 gal.) Drums extra ... ... per gal.	12 0
Boiled Linseed Oil (5 gal.) do. ... ... ,,	12 6

Sundries.

	£ s. d.
Turpentine substitute (5 gal.) drums extra ... ,,	5 6½
do. do. (40 gal.) do. do. ... ... ,,	4 8½
Solignum, Brown (5 gal. cans) Exterior ... ... ,,	6 6
Creosote (40 gal. barrels) ... ... ,,	2 0
Paste Powder (1 lb. packets) ... ... per lb.	1 6
White Lining Paper ... ... per piece	1 0

VARNISHES, etc.

Delivered London area.

	£ s. d.
Oak Varnish, Outside or Inside ... ... per gal.	1 12 6
Oak Pale Copal do. ... ... ,,	1 18 0
Hard Drying Oak for Inside ... ... ,,	2 0 0
Crystal Paper Varnish do. ... ... ,,	2 0 0
Eggshell Flat Varnish do. ... ... ,,	2 14 0
Finest Carriage Varnish ... ... ,,	2 10 0
Front Door Varnish ... ... ,,	2 0 0
Japan Gold Size ... ... ,,	1 12 6
Black Japan ... ... ,,	1 14 0
Brunswick Black ... ... ,,	1 10 0
Berlin Black ... ... ,,	1 5 0
Terebene ... ... ,,	1 8 0
Knotting (1 gal. bottles free)... ... ... ,,	2 2 0
French and Brush Polish (do.) ... ... ,,	1 18 0

GLASS

Delivered London area.

	Per ft. super s. d.
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	5½
24 oz. ,, ,, ,, ,, ,, ,,	7½
26 oz. ,, ,, ,, ,, ,, ,,	10
32 oz. ,, ,, ,, ,, ,, ,,	1 1
⅛ in. Rolled Plate	9
7/32 in. and ¼ in. Rough Cast	1 0
⅛ in. Figured Rolled and Cathedral, Standard patterns : White	9
do. Standard Tints	1 4½
do. Special Tints	2 9
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 1
⅛ in. Wired Cast	1 2
⅛ in. Georgian Wired Cast	1 2½
Hollow Glass Blocks—	Each
P.B.2 5⅜ × 5⅜ × 3⅞ in.	2 9
P.B.3 7⅜ × 7⅜ × 3⅞ in.	4 2
P.B.32 7⅜ × 7⅜ × 3⅞ in.	4 2
Radiused Corner Blocks to match up with—	
P.B. 2	5 3
P.B. 3	6 9
P.B. 32	6 9

	Per ft. super
⅛ in. Polished Plate Glass, G.G. Quality—	
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup.	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6
⅛ in. Polished Plate, extra sizes, *i.e.* plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality —Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup. or ditto	11 3
Not exceeding 200 ft. sup. or ditto	16 0
Plates exceeding 200 ft. sup., prices on application.	
Substances other than ⅛ in. Polished Plate at Special Prices.	

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. super s. d.
18 oz. sheet O.Q.	3,000	4½
24 oz. ,, ,, ...	2,000	6⅛
26 oz. ,, ,, ...	2,000	7⅜
32 oz. ,, ,, ...	2,000	10½
⅛ in. Rolled Plate	1,000	7⅛
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	7⅛
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte...	1,000	10½
7/32 in. and ¼ in. Rolled Plate or Rough Cast ...	2,000	10½
¼ in. Wired Cast, Hexagonal...	2,000	11½
¼ in. Georgian Wired Cast	2,000	1 0½

The Builder

CURRENT RATES OF WAGES

AS FROM FEBRUARY 7, 1955. **(Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)**

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	3/9½	3/9	3/8½	3/8
Labourers	3/4	3/3½	3/3	3/2½

Town.	Grade.
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Aldeburgh	A2
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A1
Altrincham	A
Amble	A1
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone R.D. (parts of)	A
Aylesbury	A2
Aylesby (Yorks)	A
Aylesham	A2
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A
Barnoldswick U.D.	A
Barnsley	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D. (exc. Thrussington A2)	A
Barry	A
Basford R.D.(exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley	A
Baxterley	A1
Beaconsfield & District	A1
Beamish	A
Bearl	A
Bearpark	A
Beccles	A2
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick District	A
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U.D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A1
Breconshire, County of...	‡A2
Brent Knoll	A2
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Brough	A
Broughton (Cheshire)	A
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A
Carmarthenshire, Cnty of	‡A2
Caernarvonshire, Cnty. of	‡A2
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippenham Within and Hardenhuish)	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Coine	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A1
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A1
Crewe	A
Cromer	A1
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Didcot	A2
Diss	A2
Doncaster C.B.	A
Dorking	A
Dorset, County of (excepting Poole, Swanage and Wimborne A1)	A2
Dover	A2
Dovercourt	A
Driffield U.D.	A1
Droitwich M.B.	A
Dudley M.B.	A
Dunstable	A
Durham City	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Exeter	A
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough U.D.	A
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A
Gravesend	A
Great Yarmouth	A
Grimsby C.B. & R.D.(part)	A
Grimsby R.D. (remainder)	A2
Guildford District	A2
Guilsborough	A1
Guiseley	A
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate	A
Hartlepool	A
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Highworth	A2
Hinckley U.D.	A
Hitchin	A
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ingatestone	A1
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A1
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Knowle	A1
Lancaster	A
Leamington M.B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A1
Letchworth	A1
Lewes	A2
Lichfield M.B.	A
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	A2
Lowestoft	A
Loxton	A2
Luton	A
Lyneham (Devon)	A2
Macclesfield	A
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A1
Malvern U.D.	A1
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough U.D.	A
Maryport	A
Matlock U.D.	A1
Melksham	A2
Melton Constable	A2
Melton Mowbray U.D.	A1
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A
Milford Haven	A1
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A
Nelson	A
Newark-on-Trent R.D.	A
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
,, Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Rayleigh	A
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A
Sleaford U.D.	A2
Slough	A
Smethwick C.B.	†A
Snettisham	A2
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A2
Stafford M.B.	A
Staines	A
Stamford M.B.	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A1
Stratford-on-Avon M.B.	A
Sunderland District	A
Sunningdale	A1
Sutton Coldfield M.B.	A
Swaffham	A2
Swanage	A1
Swansea	A
Swindon	A
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thorpe Bay	A
Thurrock U.D.C. Area	A
,, North of, to Billericay	A
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington U.D.	A
Wells (Norfolk)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A1
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Willington	A
Wilmslow	A
Wilts. County of	‡A2
Winchester	A1
Windermere	A2
Windsor and Eton	A
Wisbech	A2
Witham	A1
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A2
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
York	A

For Birkenhead, Liverpool and London the rates are:—Craftsmen, 3s. 11d.; Labourers, 3s. 5½d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 3s. 10½d.; Labourers, 3s. 5d. †Plus 2d. per working day. ‡ This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 2s. 11d. per hour. Women engaged on work other than craft processes, 2s. 7d. per hour.

For Building Trade Wages in Scotland see page 572.

NEWS IN BRIEF

SCFBTE SUMMER MEETING

The summer meeting of the Southern Counties Federation of Building Trades Employers will be held at Tunbridge Wells on May 24 and 25. Application should be made to the Secretary, SCFBTE, Sterling Buildings, Carfax, Horsham.

PROFESSIONAL BOOKLET

The Association of Consulting Engineers (Incorporated), 36, Victoria-street, SW1, have issued a booklet on "Professional Rules and Practice and Scales of Fees," including Model Forms of Agreement, price 2s. 6d. to members, 5s. to non-members.

RAILWAY FREIGHT CHARGES

The British Transport Commission have submitted to the Transport Tribunal for confirmation, the draft Railway Merchandise Charges Scheme which the Commission have prepared as required by the Transport Acts, 1947 and 1953. The scheme is a Maximum Charges Scheme to give railways greater freedom to compete with private-enterprise road transport, whose rates are not subject to any statutory control.

PLUMBERS' REGISTRATION

The Registered Plumbers' Association announce that on April 21, in the Corporation Hall, Stockton-on-Tees, the mayor, Alderman P. Horner, will officially welcome the establishment of the Tees-side District Council of the Registered Plumbers' Association. The aims and objectives of the Association and the wider issues of the registration of plumbers in Great Britain will be explained in addresses by the honorary national treasurer, Sir John Stephenson, CBE, JP, and the general secretary of the Association, Mr. J. M. Haig, AMIW, AMIP.

MOTOR CLUB DANCE

The College of Estate Management Motor Club, known as the "Cemian Motor Club" celebrated its 21st anniversary this year, at a recent dinner and dance at the Rembrandt Hotel, London. Membership of the club is open to all past and present members of the College of Estate Management and their friends, and new members would be welcome. The club runs a comprehensive calendar including social events, a race meeting, driving test meetings and rallies. Particulars from Mr. F. L. Rourke, Hon. Sec., 26, Soho-square, W1.

SMALLER SLATES FOR HOUSES

Smaller slates may be used for building purposes because, it is stated, a great problem of the slate quarrying industry is that of making delivery of large-size slates in reasonable time. It is stated that these large slates are difficult to produce for housing development, and a solution suggested is that architects and builders should specify for smaller slates although it is admitted this might result in a small increase in building costs. Bethesda (North Wales) Council has decided to try the experiment if the Ministry will increase the grant for new houses, and the architect to the council, Mr. J. I. Williams, has intimated that he did not think the smaller slate would add much to the cost per house.

FILMS ON BUILDING

The Building Research Station has issued a list of films (Supplement III) connected with building which have been viewed at the Station from January to December, 1954, with a summary of contents, running time, etc.

LEEDS SCHOOLS PROGRAMME

A £1¼m. schools building programme for Leeds in 1956-57 has been recommended for approval by Leeds Education Staffing and General Purposes Committee. It includes three new secondary modern schools, two county primary schools, extensions costing a total of £284,000, and a special school for mentally retarded children.

WORKERS' EFFICIENCY

The Medical Research Council have arranged a residential conference which is being held in Cambridge until April 3. The conference provides an opportunity for discussion of the latest results of research directed to improving the efficiency of the individual worker. Sir Geoffrey Vickers is taking the chair and about 150 delegates from industry and research establishments were expected. Further information regarding the conference is available from the Council at 38, Old Queen-street, London, SW1.

HOTEL COFFEE LOUNGE

A new "Causette" coffee lounge was opened recently at the May Fair Hotel, W1. It might be described as the counterpart of the coffee shop which is a popular feature of the larger hotels in the USA. The main objective of the "Causette" will be to provide light meals for the many business people in the West End, not to mention American and other overseas visitors, who like to take a meal as quickly as possible in attractive surroundings. The designer was Mr. George Ramon.

CIVIL ENGINEERING INDUSTRY

At the annual dinner of the North-Eastern section of the Federation of Civil Engineering Contractors, at Newcastle-on-Tyne, Mr. Paul Gilbert, national chairman, expressed regret that the Tyne road tunnel scheme had been postponed for the time being. Civil engineers were ready to go ahead with this scheme, just as they were prepared to tackle programmes of road, rail and atomic power. The civil engineering industry possessed the skill and the men which in five years of war had built the equivalent of 3,000 miles of dual carriageway.

MARSHALLING YARD PROJECT

Work has now been started by Sir Lindsay Parkinson and Co., Ltd., contractors, on the first part of the Temple Mills Marshalling Yard project for British Railways (Eastern Region). The new yard, when completed, will probably be the largest in Europe and cost £2½m. It will replace a group of out-of-date yards and will result in an estimated net saving of £150,000 a year. There will be one main distribution yard, supported by two reservoir yards, the work done by 15 of the 16 yards which at present exist. Construction of the new Temple Mills Yard is expected to take four years.

FAMILY WITH 100 YEARS' SERVICE

This year, the family of Mr. C. P. Redwood, who works for T. and W. Farmiloe, Ltd., will have represented Farmiloes in his section of the Midlands area for exactly 100 years. Mr. Redwood's father was the company's salesman in the area for 56 years, and Mr. Redwood himself has completed 44 years' service.

CHALK RESEARCH ASSOCIATION

The first general meeting of the Chalk, Lime and Allied Industries' Research Association was held on March 9 at the Association's offices at Hanover House, 73/78, High Holborn, WC1. At the meeting Mr. W. L. Clarke was elected chairman of the Association, and Mr. M. W. Hall as vice-chairman. Mr. G. E. Bessey has been appointed Director of Research.

HOUSE PLANS BOOK

A selection of recently completed houses and bungalows are illustrated in a new edition of the "Daily Mail" Book of House Plans which has just been issued. A number of the designs shown have appeared in past issues of *The Builder*. A section of the book is devoted to plans and illustrations of the houses featured in this year's Ideal Home Exhibition. The book is priced at 2s. 6d.

PRESENTATION TO BUILDER

East Grinstead and District Association of Building Trades' Employers made a presentation on February 25 to Mr. Ernest H. Munnion, of Ardingly, Sussex, who has recently retired after 35 years as president of the association. During that period **Mr.** Munnion had missed only two meetings, a record which Mr. Stephen Knight, the incoming president, described as "absolutely unique."

INTERNATIONAL DANCE

An international dance and cabaret was held by the Hammersmith School of Building and Arts and Crafts, on Thursday, March 24, at Kensington Town Hall, W8. Dancing continued until midnight to music provided by a Latin American band, and national costumes were worn by guests. Among the groups participating in the function were Iraqis, Nigerians, Estonians, Indians, Cypriots, Polish and other nationalities.

BUILDERS VISIT GERMANY

A party of builders from the London Region of the Federation of Master Builders will tour a group of the Rhineland towns, including Cologne, Dusseldorf and Bonn, from May 6 to 10. Arrangements have been made for the visitors to see current methods of site organisation, and the application of machinery and powered tools in constructional work. Dr. Edwin Gerland, president, German Building Industries' Federation, is sponsoring the tour, of which a film record will be made to be shown at London Area meetings of the Federation.

PERSONAL COLUMN

MR. EDWARD A. WILLMENT has accepted an appointment as general sales manager of the OBO Construction Co., Ltd., Twickenham, Middlesex.

TRADE NEWS

WASTE FITTINGS

A folder giving details of their range of drawn copper traps and lightweight waste fittings has been produced by Conex Terna, Ltd., 16, Berkeley-street, W1.

FIRM'S SILVER JUBILEE

Their silver jubilee is being celebrated this year by Eeto Insulations, Ltd., River-street, Bolton, Lancs. The insulated cylinder and tank jackets produced by this company are supplied to fit any size or shape, and consist of a layer of fibreglass with a stout canvas backing and outer covers of various materials, such as washable cream plastic.

RUSTPROOF SLOTTED ANGLE

The slotted angle manufactured by Stonehouse Steel Equipment, Ltd., subsidiary of Williams and Williams, Ltd., Victoria House, Southampton-row, WC1, in addition to the paint finish at present supplied, can now be obtained rustproofed by the hot dipped galvanising process.

HEATING "AT HOME"

An "At Home" to architects, engineers and contractors will be held by Hurseal, Ltd., Gulf Radiators, Ltd., and Sealdraught, Ltd., from 12 noon to 8 p.m. on April 21 at the Building Centre, Store-street, W1. A women's Brains Trust on heating, with a panel comprising a heating engineer, architect, housing manageress and housewife, will take place, and new equipment will be on view.

FLOOR-HEATING SYSTEM

In a new car showroom of Lookers, Ltd., recently opened at Deansgate, Manchester, the heating of the entire building (including showroom and offices) has been effected electrically by a low-temperature radiant floor-warming system produced by Panelec (Great Britain), Ltd., 27, Hatchlands-road, Redhill, Surrey. This floor-warming system is completely concealed, and operates at a low temperature. It is equipped with thermostatic controls to maintain an internal comfort level of 55 degrees F. in the showroom and 65 degrees F. in the offices, and the whole system is arranged, by means of a time switch, for "off-peak" operation, enabling intake to be restricted to hours when lower electricity tariffs are available.

GTMA ACTIVITIES

The sixth edition of their free handbook has been published by the Gauge and Tool Makers' Association, Standbrook House, 2-5, Old Bond-street, W1. It includes a complete list of member-firms and a buyers' guide index to their products. Fifty companies in the Association will be displaying a range of their manufactures on a composite stand at this year's British Industries Fair, to be held at Castle Bromwich, Birmingham, from May 2 to 13, and a special catalogue of products to be exhibited is in course of preparation. The Association will be holding another competition this year in craftsmanship and draughtsmanship for apprentices and learners employed with member-firms; and the closing date for entries will be August 31. In both craftsmanship and draughtsmanship sections of the competition, there will be a number of set-pieces and also an "open" group.

CENTENARY BOOKLET

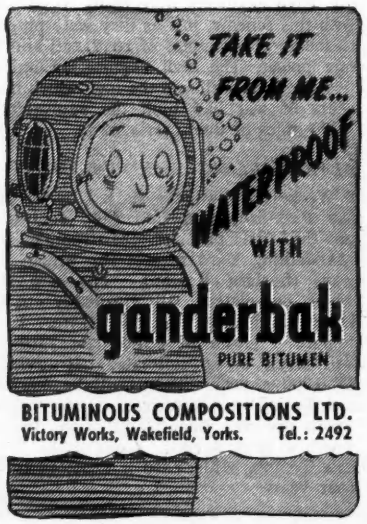
To mark their centenary this year, Szerelmey, Ltd., have published a special edition of their illustrated booklet on "The Cause and Cure of Damp and Decay in Masonry." Copies from the company at Szerelmey Works, Rotherhithe New-road, SE16.

MECHANICAL HANDLING DEMONSTRATION

A demonstration of a standardised system of mechanical handling, featuring the Ferguson Mobile Power Unit and a wide range of industrial equipment, will be held on April 5 and 6 at British Railways Car Park, Ashton-avenue, Ashton Gate, Bristol 3. The demonstration is sponsored by College Motors, Ltd., the Ferguson distributors for Bristol, in association with Massey-Harris-Ferguson (Sales), Ltd., and a number of other machinery manufacturers. A Devon firm, Messrs. E. V. Twose (Manufacturing), Ltd., of Tiverton, will be taking part with their "Tractamount" road roller. This device utilises a Ferguson unit by mounting the unit on a roller chassis. By connecting the two, the pair become a traditional road roller in a matter of minutes.

"THIS WAY FORWARD"

The development of the firm of Sir Lindsay Parkinson and Co., Ltd., 171, Shaftesbury-avenue, WC2, from a joiner's workshop in Blackpool in the latter part of the last century into a world-wide firm of civil engineering and building contractors is related in a well-illustrated history of the first 75 years of the company's existence. Entitled "This Way Forward," this pleasantly produced book provides an interesting account of the various projects and activities with which the firm has been connected. The first really large contract completed by the firm was the building of the £1m. Queen Mary Hospital at Whalley for Lancs CC. That was carried out in 1911, and since then the firm and its subsidiaries have undertaken many large projects, ranging from the reconstruction of the Esna Barrage on the River Nile to the construction of army camps in Cyprus.



LEAFLETS ON TIMBER

Leaflets No. 47 and 48, issued by the Forest Products Research Laboratory, deal with "The Movement of Timbers" and "Hardwoods for Industrial Flooring" respectively. Copies, free, from the Laboratory at Princes Risborough, Aylesbury, Bucks.

FIRM'S ANNIVERSARY

Their 21st anniversary was celebrated by Expandite, Ltd., Chase-road, NW10, on February 22 and the occasion was marked by a private reception at which all employees joined with the directors in toasting the "Coming of Age." Mr. B. Watson, managing director and founder of the company, responded to the toast.

CONVECTION UNIT

The "Heatpac" manufactured by F. H. Biddle, Ltd., 52, Clerkenwell-close, London, is a high performance forced convection unit, designed to operate on an indirect hot water system, and can be recessed into a wall or built beneath a hall stairway. The unit is available with the front panel finished in grey, cream, brown, or green stoved enamel.

THE FACTORY EXHIBITION

Exhibiting for the first time at the Factory Equipment Exhibition, which remains open at Earls Court until tomorrow, April 2, the Expanded Metal Co., Burwood House, Caxton-street, Westminster, SW1, have on display examples of every form of expanded metal mesh used in the construction of a factory. One feature of the stand is a series of concrete slabs illustrating the use of expanded steel for reinforcement of surfaces subject to heavy wear, such as factory floors.

A scale model showing the applications of their system of precast reinforced concrete to industrial buildings is displayed by Orlit, Ltd., Colnbrook, Slough, at the Factory Equipment Exhibition. The scale model incorporates typical multi-storey, flat-roofed, pitched roof, north light, and monitor roof sections. The stand has been designed by Sir Hugh Casson, RDI, MA, FRIBA, in conjunction with Mr. Neville Conder, ARIBA, MISA.

ALARM MAT

An automatic "alarm mat" has been placed on the market by the British Distributing Co., 591, Green-lanes, N8, which can be concealed beneath carpets or linoleums to give warning of visitors or intruders. It is a black pad $\frac{1}{4}$ in. thick and 24 in. by 18 in. in area, and has interior micro spring contacts.

ROOF LIGHTING

Very often building economy can be improved by the utilisation of roof space for living quarters, offices or industrial purposes, and to facilitate this the Velux Co., Ltd., 167 Victoria-street, SW1, have developed a rooflight window designed to give proper ventilation, finger-light control of the casement and easy cleaning of the outside glass surface from within. It can be installed in all types of pitched roofs of over 30 degrees, and is provided with double glazing. Constructed of metal externally and wood inside, the window can have blinds or curtains fitted in the space between the external and internal panes.

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OVERSEAS BUILDING

[*From Our Own Correspondents*]

India.—A co-ordinating committee set up by the Government of India in conjunction with the Madras Government to prepare a project report for the mining and utilisation of lignite deposits at Neiveilli in Madras State, has suggested that a fertiliser plant and a synthetic oil plant be constructed. The Synthetic Oil Committee has had its plan accepted by the Indian Government for the construction of a 300,000-ton plant at an estimated cost of £10m. It has been agreed that a project report for the plant should be prepared before decisions regarding capital investment can be taken. The appointment of consultants to prepare such a report is now under consideration and a decision is expected shortly.

Jamaica.—The new Peoples National Party Government have announced a plan to attract, over the next five-year period, new investments in industry and agriculture of approximately £50m. The plan should be ready by April 1, and will include an all-island survey of land usage and resources.

Kenya.—The African Affairs Committee of the Nairobi City Council, Kenya, has decided that its £2m. five-year African housing plan is inadequate. The city council is also considering the possibility of establishing its own building branch because costs of building African houses have risen. . . . The Kenya Police have placed a £200,000 order with a local firm for a new type of European, Asian and African housing which can be erected in 21 days using precast concrete wall panels.

Work is to begin soon on a £328,000 scheme of the Mombasa Municipal Council for the housing of 3,731 Africans in seven different types of flats and houses. . . . It has been reported that 75 miles of Kenya's roads, including 62 miles of the Nairobi/Mombasa section will be bituminised over the next few years by the Public Works Department and private contractors at a cost of roughly £750,000. Five major schemes are involved. The Mombasa road section is expected to cost about £11,000 a mile. It is also known that the Naivasha, Nairobi, and Nakuru County Councils are investigating the possibilities of raising loans to bituminise roads in their areas.

Malaya.—A £1¼m. scheme to double water supplies to the Ipoh region has been submitted to the Malaya Government by the Waterworks Department of Perak. . . . Malayan Textiles Mills Ltd. are to build a £125,000 factory in Singapore for the manufacture of cloth. . . . One thousand new homes are to built by the Federal Housing Trust of Malaya. Sites have been found and preliminary plans are near completion. The houses will be erected in Kuala Lumpur, Penang, Johore, Bahru, Kuala Trenagganu, Alor Star and Seremban. According to the Trust Manager, Mr. V. Z. Newcombe, the estimated cost is about £1,200,000.

Under a £10m. five-year plan, eight Malayan towns will get improved electricity supplies. A number of power stations are just being constructed which will feed Klang, Port Swettenham, Ipoh, Taiping, Kota Bahru, Seremban, Muar, and Segamat. The work is being put in hand by council authorities of the aforementioned towns. The City Council of Singapore is to raise a loan of £3½m. to finance its electricity and water expansion plans. According to Mr. J. T. Rea, acting city president, Singapore Council has so far spent about £13m. on extension programmes which will ultimately cost £25m.

Tanganyika.—The Tanganyika Government has announced plans for government buildings in Dar es Salaam to cost £2m., including a new legislative council building, new law courts, and offices. The plans are regarded locally as indicating the government's attitude to suggestions that the administrative capital be moved up-country.

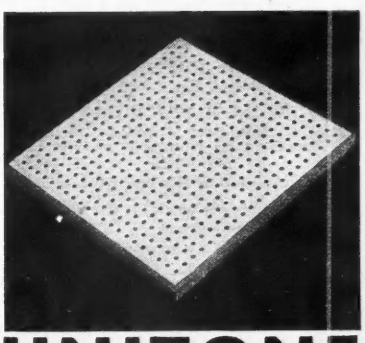
A hospital expected to cost £600,000 is planned for construction in Dar es Salaam over the next three or four years, including a training school likely to cost £300,000. Extensions to the European hospital, estimated to cost £200,000, are also under consideration.

Trinidad.—The Alcoa Steamship Co. is to extend its bauxite storage at Tembladora by 30,000 tons capacity; a new prefabricated store is being designed by the company's engineers. . . . Among the major projects to be carried out during 1955 in the colony's economic programme are a new 7-storey block of government offices in Port-of-Spain, estimated to cost $1,250,000; additions to the mental hospital, St. Anns, at a cost of $887,000 and four new police stations estimated to cost $500,000. All these will be designed in the office of the Chief Architect, Works and Hydraulics Department, Government of Trinidad and Tobago.

Work has commenced on a $60,000 church dedicated to St. Christopher, and to be known as the Travellers' Church, at Siparia in south Trinidad. The contractors are Ash and Watson, of Port-of-Spain, and the building has been designed in the office of Mr. Milton Ramsaron, Civil Engineering Department, Trinidad Petroleum Development Ltd., Palo Seco.

Uganda.—The Uganda Government recently laid before the Legislative Council plans for development work over the five years 1955 to 1960 involving expenditure of £30m. The money is allocated as follows: African housing and water supplies, £6,919,000; road communications, £6,023,800; Government offices, houses, etc., £1,963,445; buildings for social services, £4,604,890; other works, £11m. approximately.

The Uganda Electricity Board is having surveys made of the River Nile above Jinja to determine the most suitable site for a future hydro electric station.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CANADIAN TRADE MISSION

*A group of 48 business men from the Vancouver Board of Trade are coming on a mission to London, arriving by air on April 12 and leaving to return to Vancouver on April 23. The majority of them are believed to be buyers interested in purchasing British goods, including materials connected with the building industry. A programme of receptions and visits has been arranged from April 12 to 16, and members of the mission will be arranging most of their business appointments between April 18 and 22.

Arrangements for the tour are in the hands of Mr. W. A. McAdam, Agent-General for British Columbia, British Columbia House, 1-3, Regent-street, SW1, to whom inquiries should be addressed.

The following is a list of those members of the mission, and the firms they represent, interested in materials connected with the building industry: F. P. Bernard, president, McNicol Insulation Co., Ltd., insulation products and building materials; A. B. Cliff, president, Prince George Planing Mills, Ltd., planing and sawmill machinery-planers, resaws, trimmers, edgers, moulders; G. B. McKeen, managing director, Deeks-McBride, Ltd., building supplies, clay products, reinforcing steel, cast-iron pipe and wire mesh; L. J. Corcoran, president, North-Western Supply Co., Ltd., metal windows and glass; H. B. R. Kirkpatrick, vice-president and managing director, Marshall-Wells B.C., Ltd., fencing, plumbing and builders' hardware; R. A. Smith, president, International Factory Sales Service, Ltd., builders' hardware and construction materials, electric appliances.

BOARD OF TRADE APPOINTMENTS

Mr. H. W. Woodruff, Trade Commissioner and Economic Adviser to the High Commissioner in the Federation of Rhodesia and Nyasaland, will be leaving Salisbury for the United Kingdom at the end of May on completion of his tour. He will be succeeded by Mr. J. W. Stoodley, at present serving as Trade Commissioner Grade II, in Pretoria.

Mr. G. W. McNeil, OBE, formerly Trade Commissioner at Chittagong, and at present serving in the Commercial Relations and Export Department of the Board of Trade, will leave the United Kingdom by sea for South Africa on April 21, to fill the vacancy at Pretoria.

1955 MILAN FAIR

The 1955 Milan International Samples Fair will be open from April 12 to 27. It

* From the Board of Trade Special Register Information Service.

will be one of the largest international trade fairs ever held, and is expected to attract a total of four million visitors in 16 days. Some 85,000 buyers are expected from outside Italy to see the products of 12,000 exhibitors, including 3,000 foreign manufacturers or their agents. Several hundred UK manufacturers have made independent arrangements for their products to be displayed in the appropriate trade sections throughout the fair. The UK stand, organised by the Board of Trade, will include in its functions the answering of inquiries about United Kingdom trade and will assist UK exhibitors in the trade sections.

ALUMINIUM WINDOW FRAMES

*Mr. A. P. Bargman, Room 1107, Rice Hotel, Houston, Texas, USA, is interested in importing aluminium window frames (without the glass) from the United Kingdom. He is also interested in bathroom fixtures.

Manufacturers interested in this inquiry should write direct to Mr. Bargman by air mail, giving quotations in US dollars, cif Houston, and sending trade literature and any other relevant information. Telephone inquiries to Chancery 4411, ext. 776, quoting ref. ESB/6170/55.

BATHROOM FITTINGS

*Mr. L. V. C. Henriques, 136, Harbour-street, Kingston, Jamaica, is interested in representing in Jamaica United Kingdom manufacturers of bathroom fittings, i.e., baths, lavatory basins and toilets.

Manufacturers interested in this agency inquiry should send full details of their offers to Mr. Henriques. Telephone inquiries to Chancery 4411, ext. 776, quoting ref. ESB/5639/55.

UGANDA HOUSING SHOW

Free Home to be Won

OF THE THOUSANDS of people from the Protectorate who are expected to visit Uganda's Better Homes Exhibition at the Ntinda Estate, Kampala, in May (details of which were published in *The Builder* of November 12, 1954 and February 18, 1955) one will leave the exhibition the owner of a new £310 furnished house. This was decided at a meeting on March 22 of the exhibition's management committee.

Guides to the exhibition—both in English and Luganda—will be numbered and sold at the show. The holder of the winning programme, which will be drawn for, will be presented with the house.

An ideal house for a small family, it has two main rooms, a kitchen, ablution, food store and a pit latrine. It is built of concrete blocks with an asbestos roof and stands on a small plot with up to ¼ acre of land for cultivation.

Work on the exhibition site is now in full swing and some of the new houses are beginning to reach advanced stages of construction. Plots for trade stands have been marked out and levelling of the ground has been started. Gardens are being laid out now so as to be in full bloom by the time the exhibition opens. About 30 firms have applied either for trade stands or plots to build demonstration houses. The exhibition is being held from May 21 to 31.

The SCOTTISH BUILDER

Glasgow Multi-Storey Flats

FURTHER steps in the extension of Glasgow's construction of multi-storey blocks of flats were taken by the Corporation Sub-Committee on Sites and Buildings recently. In addition to approving plans for two 10-storey blocks at Toryglen, the committee instructed the City Architect to report with regard to the possibility of incorporating flats of multi-storey construction in portions of the layouts already approved for the Castlemilk, Drumchapel, and Easterhouse schemes.

MR. JAMES R. DUNCAN, Housing Convener, said afterwards that this suggestion had been put forward as a result of the visit made by a delegation to housing schemes in England.

Housing schemes there, he said, were varied by the introduction of perhaps two blocks of multi-storey construction into a scheme of maisonette or three- or four-storey houses, and he had felt it was worth investigating the possibility of doing the same in Glasgow. In England the tendency was to work on these lines rather than to have a conglomeration of all multi-storey flats in a single area. As a result, it was possible to have not only varied development, but also variety in the type of tenants placed in the schemes.

There was no objection on the part of tenants in the South living 10 or 12 storeys up, he said. On the contrary, most tenants in the scheme were anxious to occupy top floors, with their improved outlook, rather than live in the lower levels of the multi-storey blocks.

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SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from February 7, 1955. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 3s. 9½d.; Labourers, 3s. 4d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.* s.	d.
1st	25	41	8½
2nd	33⅓	55	7½
3rd	50	83	5
4th	66⅔	111	2½
5th	75	125	1½

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	4
Operatives on labouring operations (at end of probationary period)	3	0½

Planning Appeal Fails

THE BERWICK FIRM of John Stoddart, Ltd., have been officially informed that the Ministry of Housing and Local Government has rejected their appeal against a refusal of permission to build two lock-up shops with flats in Golden-square.

At an inquiry conducted by a Ministry inspector the Town Council strongly supported the project, claiming that shops were needed in Berwick's town centre.

The Ministry of Transport objected on the grounds that the shops would cause standing traffic on a section of the Great North-road, at the entrance to the Royal Tweed Bridge. Their view has been upheld.

NEW BUILDINGS

Aberdeen.—Plans have been approved for infants' school (estimated cost approximately £48,300) at Matricks housing scheme. Architect, Alexander B. Gardner (F), Housing Offices, Broad-st., The Castlegate, Aberdeen.

Bothwell.—Lanarkshire CC has had plans prepared for 90 houses as the second development of the Woodlands housing scheme. Architect, Samuel MacColl (A), County-bldgs., Beckford-st., Hamilton West.

Dumbartonshire.—Plans have been approved for Beattie's Biscuits, Ltd., Cranston-st., Granstonhill, for additions and alterations to their Drumchapel factory. Architects, John Keppie & Henderson & Gleave, 21, Woodside-pl., Woodlands-rd., Charing Cross, Glasgow.

Edinburgh.—Plans have been prepared for the city's first omnibus station, with restaurant, waiting rooms, general offices, etc., to be erected (at an estimated cost of £250,000) at Clyde-st. by the Scottish Omnibus Co., Ltd. Engineer, James Cameron, Engineer's Offices, Omnibus-bldgs., Hamilton.

Glasgow.—Plans for Messrs. Y. E. Key, Perevil-ave., Burnside, Rutherglen, have been approved for scheme of reconstruction, alterations and additions and new garage, etc., at Monteith-row. Architects, F. J. Beveridge & Dallachay (A), 257, West George-st., Blythswood-sq., Glasgow.

Glasgow.—Plans have been approved by the corporation for new fire station (estimated cost £50,000) at Anniesland and Ryvra-rds, Annisland. Plans by the Architectural and Planning Department, Municipal-bldgs., George-st., Glasgow.

Glasgow.—Plans have been approved for new corporation buildings for the Cleansing Department at Polmadie, Rutherglen-rd. Architects, Wylie, Shanks & Wylie (F&A), 13, Claremont-cres., Charing Cross, Glasgow.

Hamilton.—Lanarkshire CC has had plans approved for secondary (junior) school (estimated cost £227,850) at the Earnock housing estate, for which the County A is William R. Watt (F), Council Offices, Albert-st., Motherwell-Wishaw.

Inverness.—Plans are in hand for Protestant public school at the Milton district. Architect, Alexander Cullen (F), County Architectural Offices, Inverness Castle, Castlehill, Inverness.

Kilmarnock.—Plans prepared by their own architects for new cotton spring-mill and other buildings (estimated cost £15,000) at Holmlee-rd. and West Langlands-st. have been approved for Blackwood, Morton & Sons, Ltd., Burnside Mills, Britannia Works, Kilmarnock.

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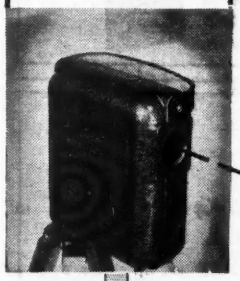

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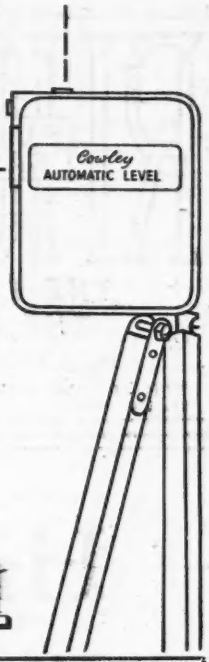

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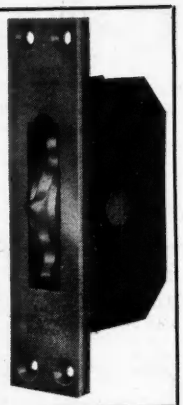

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CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

APRIL 2.

†**East Sussex CC.**—Family group home at Ringmer. County A, Lewes. Tenders by May 23.

APRIL 4.

*†**Plymouth City C.**—Building contractors for erection of school buildings; heating engineers for installation, etc.; electrical contractors for installation of Ernesettle sec. mod. sch. City A, Seymour-rd. Dep. £3 3s. each.

APRIL 7.

*†**Hants Police Authority.**—Police officer's house, Basingstoke. County A, Winchester. Dep. £1 1s.

*†**Newcastle Reg. Hosp. Bd.**—New wing, Newcastle General Hospital. Secretary, 'Dunira,' Osborne-rd., Newcastle-upon-Tyne, 2.

†**Peterborough Combined Police Authy.**—Police headquarters at Bridge-st. L. H. Robjohn, S to Authy. Dep. £5 5s. Tenders by May 13.

APRIL 8.

*†**West Sussex CC.**—Extension, Greenway junior school, Horsham. County A, Chichester. Tenders by May 11.

APRIL 9.

*†**Brierley Hill UDC.**—120 dwellings, Tack Farm estate. J. R. Moore (A), Civic-bldgs. Dep. £2 2s.

*†**Middlesbrough CBC and RC Diocesan Trustees.**—Erection of St. Anthony's RC school adjoining Town Farm housing estate. Director of Education, Woodlands-rd. Dep. £5 5s. Tenders by May 6.

APRIL 11.

*†**Andover BC.**—Five houses, Dene-rd. BS. Dep. £2 2s.

APRIL 12.

*†**Sutton and Cheam BC.**—Cemetery superintendent's house, garage and office adjoining Sutton Cemetery. BE&S. Dep. £1 1s. Tenders by May 13.

*†**Winchester City C.**—10 dwellings, Wolvesey-terr. A. S. Wilson & Ptnrs., chartered quantity surveyors, 8, Storey's-gate, SW1. Dep. £2 2s.

APRIL 14.

*†**Bucks C€.**—Building work at six schools. County A, Aylesbury.

*†**Glasgow Corpn.**—Shops and flats, Cadder-rd. Architectural and Planning Dept., 20, Trongate, C1.

APRIL 15.

*†**Selby UDC.**—30 houses, Stainer Wood estate. G. L. Thompson (F.), Clifton-chbrs., Park-st. Dep. £2 2s.

*†**Teignmouth UDC.**—Maisonettes and flats, Bitton-st. and Gloucester-rd. Louis de Soissons, Peacock, Hodges, Robertson & Fraser, architects, 5, Portland-sq., Plymouth. Dep. £3 3s.

APRIL 16.

*†**East Sussex CC.**—Extensions, Bexhill Grammar School for Girls. County A, Lewes.

APRIL 18.

*†**Frinton and Walton UDC.**—Three public shelters. E&S. Dep. £1 1s. each.

*†**Middlewich UDC.**—21 houses, Chadwell Fields estate. R. J. B. Wilkinson, S. Dep. £3 3s.

*†**Swansea CBC.**—232 dwellings, Bonymaen estate. Boro' A.

APRIL 20.

*†**Huntingdon RDC.**—Booster station, etc., Ellington. Pick, Everard, Keay & Gimson, engineers, 6, Millstone-la., Leicester. Dep. £2 2s.

APRIL 21.

*†**Glasgow Corpn.**—Shops and flats, Castlemilk site. Architectural and Planning Dept., 20, Trongate, C1.

APRIL 23.

†**Wantage RDC.**—12 houses and 12 flats in Harwell. CS. Dep. £2 2s.

*†**Widnes BC.**—Additions to Victoria Hall, Victoria-rd. H. Nevile Player (A), Brendan House. Dep. £5 5s.

APRIL 25.

*†**Halstead UDC.**—50 houses, 13 garages, etc., Park Fields estate. A. E. Wiseman, architect, 10, Duke-st., Chelmsford. Dep. £3 3s.

APRIL 26.

*†**Leicester City C.**—Junior school, Overdale-rd., South Knighton. Symington, Prince & Pike, architects, De Montfort House, De Montfort-sq. Dep. £3.

APRIL 27.

*†**Melton Mowbray UDC.**—117 houses, Dorothy-ave. site. E&S, Egerton Lodge. Dep. £2 2s.

APRIL 29.

Cork (Eire) CC.—Central hospital at Bantry. J. R. Boyd Barrett, architect, 5, Camden-pl. Dep. £50.

*†**Portsmouth City C.**—Fire brigade headquarters, Copnor-rd. City A, 1, Western-par. Dep. £1.

Saltash BC.—Block of eight flats, Grenfell-ave., second ext. housing site. BS. Dep. £2 2s.

APRIL 30.

*†**Brighton CBC.**—Six garages and three maisonettes, Sylvan Hall estate. BE&S, 26-30, King's-rd. Dep. £2 2s.

MAY 2.

*†**Walsall CBC.**—Three shops, Reservoir-st. BE&S. Dep. £2 2s.

MAY 4.

*†**Alton RDC.**—Four dwellings, Babs Field, Bentley. E. Dep. £3 3s.

*†**Reading CBC.**—Conversion work at New Town sec. sch and Alfred Sutton sec. sch. Sambury & Chamberlain (L/F), 14, Cross-st. Dep. £2 2s.

MAY 7.

*†**Carlisle City C.**—210 houses, Morton. City S, 18, Fisher-st. Dep. £2 2s.

MAY 9.

*†**Birmingham City C.**—11 garages, Highfield-rd., Yardley Wood. City A. Dep. £2 2s.

NO DATE.

*†**Malden and Coombe BC.**—Three houses, Manor-dr. North, and 16 flats, Newhouse-cl. BE&S.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

APRIL 8.

*†**Wimbledon BC.**—Painting street lamp standards, brackets and fittings. BE&S. Dep. £2 2s. Tenders by April 22.

APRIL 9.

Corby UDC.—Clerk of the Council. (Materials.)

APRIL 14.

Wells RDC.—External painting of houses at West Horrington (9), Chewton Mendip (2), Godney (6), and Walton (6). E&S. Dep. £2 2s.

APRIL 15.

*†**Birmingham City C.**—Electric lift, Alvechurch-rd., West Heath. City E&S. Dep. £2 2s.

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APRIL 23.

*†**East Grinstead UDC.**—External painting 148 dwellings. S. Dep. £2 2s.

NO DATE.

Witney RDC.—Exterior painting of 450 houses. Housing Manager, "Hillside," Witney, Oxon.

ROADS, SEWERAGE AND WATER WORKS

APRIL 4.

Leyton BC.—Annual contracts for road surfacing. BE&S.

APRIL 12.

†**Witney RDC.**—W22/8 contract 11, Burford water supply. Howard Humphreys & Sons, engineers, Victoria Station House, Victoria-st., Westminster, SW1. Dep. £3 3s. Tenders by April 25.

APRIL 13.

*†**Bristol EC.**—Relaying and resurfacing of playground areas of certain schools. Chief Ed. Officer.

Hornsey BC.—Highway works. BE&S.

APRIL 14.

St. Austell UDC.—4,972 lin. yds. of concrete tubes and 1,002 lin. yds. of glazed stoneware pipes. E&S. Dep. £3 3s.

APRIL 15.

†**Lagos Executive Dev. Bd.**—Oke Suna reclamation scheme at Lagos. J. W. Henderson, Chief Executive Officer, Lagos Executive Development Board, Reclamation-rd. PO. Box 907, Lagos, Nigeria. Tenders by September 23.

APRIL 16.

Portsmouth City C.—Improvement of 1¼ miles of Southwick Hill-rd., Cosham, etc. City E. Dep. £2 2s.

Todmorden BC.—Detritus tank, sludge pump house, etc. W. Foster, AMInstCE, 5, Branksome-ave., Prestwich, Lancs. Dep. £2 2s.

APRIL 18.

Chippenham BC.—1955/56 highways maintenance contract. BE. Dep. £1 1s.

Fareham UDC.—Extensions to Salterns-la. sewage disposal works. E&S. Dep. £5 5s.

APRIL 22.

Cambridge Univ. and Town Waterworks Co.—6,400 lin. yds. of spun-iron water mains and 50 lin. yds. of flanged steel pipes. Managing Director. Dep. £2 2s.

APRIL 25.

Hoddesdon UDC.—Car park, Conduit-la., Hoddesdon. E&S. Dep. £1 1s.

Lee Conservancy Catchment Bd.—Mass concrete flood channel and bridge, together with road works, etc. N. Medrington, AMICE, MIWE, engineer, "The Grange," Crossbrook-st., Cheshunt, Herts. Dep. £5.

APRIL 27.

Cosford RDC.—Brick-built pumping station, chlorination house and 100,000-gal. concrete surface tank, etc. Lemon & Blizard, consulting engineers, 59, Tufton-st., SW1. Dep. £10 10s.

APRIL 29.

Anglesey CC.—Contract 31, laying of 4,120 lin. yds. of spun-iron main between Boddfordd and Glanyr-Afon. Contract 35, laying of 7,375 lin. yds. of spun-iron mains between Rhosmeirch and Talwrn. Rofe and Raffety, engineers, 3, Victoria-st., SW1. Dep. £2 2s. each.

NO DATE.

Penrith UDC.—Proposed duplication of trunk main at Low Hartsop, involving about 4,625 yds. piping. Water E. Dep. £3 3s.

GENERAL BUILDING WORK (LONDON)

City.—SITE SURVEY.—A survey of the site of the Old Change House, by St. Paul's Cathedral, is being carried out by Holloway Bros. (London), Ltd., bldg. contrs., 157, Millbank, SW1.

Dagenham.—OLD PEOPLE'S FLATS.—Hsg. Com. recommend that proposals for the development of the grounds of "Woodlands" House, Rainham-rd. North, by the erection of flats for old people be approved by BC.

Dagenham.—WORKS BUILDING.—TP consent has been granted to proposals by the Ford Motor Co., Ltd., for the erection of a body styling building at Rainham Works, Rainham-rd. South.

Dagenham.—FACTORY.—Proposals for the erection of a factory on the Hainault Industrial Estate made by B. Berger & Co., Ltd., 176, Albion-rd., N16, have been given TP consent.

Dagenham.—FACTORY.—The erection of a factory on the Hainault Industrial Estate, proposed by the Art Steel Equipment Co., Ltd., 33, Mountgrove-rd., N5, has been given TP approval.

Dagenham.—TREATMENT CENTRE.—No objection has been raised by BC to proposals by Essex CC for the erection of a combined treatment centre at the Marks Gate Estate.

Dagenham.—SCHOOL SITE.—BC have approved proposals by Essex CC for the use of land between Goresbrook-rd. and Ripple-rd. as a site for the new Dagenham St. Peters RC School.

Hackney.—FLATS.—Proposals have been recommended for MBC's approval, providing for the erection of 76 flats in a nine-storey block on vacant land between Homerton High-st. and Ponsford-st.; also one four-storey block of eight lock-up shops with 24 flats over on a site to the north of Homerton High-st. in front of the original Banister House Estate. The total estimated cost of the scheme is £305,350.

Hornchurch.—SERVICE STATION.—Proposals have been made by L. T. Groves for the erection of a service station, workshops, stores and office on a site in New-rd., A.13, at the corner of Walden-ave., Rainham.

Hornchurch.—OFFICES, GARAGES.—TP permission has been given to the erection of offices, workshops, garages and stores in New-rd., A.13, at the corner of Spencer-rd., Rainham, proposed by S. B. Budge & Co., 478, Barking-rd., E13.

Hornchurch.—CHURCH AND CHURCH HALL.—The demolition of five cottages and the erection of a church and church hall on the site at Nos. 68-76, Ardleigh Green-rd., Hornchurch, proposed by the Parochial Church Council of All Saints, Squirrels Heath, has been given TP consent.

Hornchurch.—HOUSES.—TP and by-law approval has been given to three houses proposed by West and Evans, Ltd., for erection at 105-109, Suttons-la., Hornchurch.

Hornchurch.—HOUSES.—Amended plans submitted by the Chelmsford Building Co. for the erection of four houses at Athelstan-rd., Harold Wood, have been given approval by TP Com.

Hornchurch.—SHOPS AND MAISONETTES.—By-law approval has been given to proposals by Bovis Holdings, Ltd., 1, Stanhope Gate, W1, for the erection of 27 shops and maisonettes in The Broadway, Elm Park.

Hornchurch.—SHOPS AND OFFICES.—The erection of five shops with office accommodation over on a site in Station-rd., Upminster, proposed by A. W. Cann & Co., has been given TP approval.

Hornchurch.—SHOPS AND MAISONETTES.—TP Com. have approved proposals by Edis Estates, Ltd., for the erection of seven shops with maisonettes over in The Broadway, Elm Park.

Hornchurch.—HOUSES.—TP approval has been given to the erection of 36 dwelling houses in Humber-dr., Stour-way and Dee-cl., Upminster Park Estate, proposed by the Maylands Green Estate Co., Ltd. Proposals by the same firm for the erection of 106 dwelling houses at Fleet-ave., Fleet-cl., and Dart-cl.; also the erection of 12 shops and 12 flats over at Albany-rd. By-law approval has been given.

Hornchurch.—SHOPS, MAISONETTES AND FACTORY.—By-law consent has been given to proposals by Thomas Bates & Son, Ltd., bldrs., Blackheath Hill, SE10, for the erection of four shops with four maisonettes over at North-st., Hornchurch. Proposals by the same firm for the erection of a factory at The Old Brickworks, Church-rd., Harold Wood, have been given TP permission.

Hornchurch.—WAREHOUSE.—The erection of a warehouse at their premises in Hornchurch-rd., Hornchurch, has been proposed by Roneo, Ltd.

Hornchurch.—SHOPS AND FLATS.—Proposals by the Elm Park Development Co., Ltd., for the erection of 14 shops and 12 flats in one block on Mungo Park-rd., Elm Park, have been given by-law and TP approval. Amended plans for the erection of 156 houses on Section 4 of the Elm Park Estate, South Hornchurch, submitted by the same company, have been given by-law approval.

Hornchurch.—FACTORY.—Proposals have been made by Tiptools, Ltd., for the erection of a factory at New-rd. junction, Spencer-rd., Rainham.

Hornchurch.—FACTORY.—The erection of a factory at Stafford-ave., Hornchurch, has been proposed by the Stafford Engineering Co.

Hornchurch.—OLD PEOPLE'S DWELLINGS.—The erection of three blocks of old people's dwellings on a site in Suttons-ave. has been proposed by Hornchurch Parish Charities.

Hornchurch.—HOUSES.—By-law approval has been given to proposals by the Manber Building Co. for the erection of eight houses in Lambs-la. and Warwick-la., Rainham.

Hornchurch.—FACTORY.—The erection of a factory at The Old Brickworks, Church-rd., Harold Wood, proposed by Refrigeration Insulations, Ltd., has received by-law consent.

Hornchurch.—WORKSHOP.—By-law approval has been granted to proposals by Toolrite, Ltd., for the erection of a workshop and offices in Bryant-ave., Hornchurch.

Hornchurch.—FOUNDRY AND COOLING TOWERS.—By-law consent has been given to phase 1 of the erection of a foundry and cooling towers at New-rd., Rainham, proposed by the Ford Motor Co., Ltd.

Walthamstow.—FLATS.—Hsg. Com. have approved a scheme submitted by Boro' A.E&S for the erection of four additional flats on the site of The Drive (First Area) and MH&LG approval is being sought. Boro' A.E&S is to report on the possibility of erecting further dwellings on the site.

Woolwich.—DEVELOPMENT.—Layout plans for the proposed commercial development of the eastern portion of the Hough-st. Relocation Area, submitted by Dev. Com., have been given LCC approval in principle.

Woolwich.—FLATS.—Hsg. Com. approval has been given to plans submitted by BE for the erection of a four-storey block of 16 flats on the St. John's Church-st. site, Wellington-st.

(PROVINCIAL)

Accrington.—MoW propose erection of automatic telephone exchange on site bounded by Bank-st., Bridge-st. and Infant-st., and new employment exchange on site bounded by Melbourne-st. and Water-st.

Bakewell.—UDC instructed Jackson & Nicholas, architects, to prepare plans for 8 bungalows at Burton-cl. estate.

Billingham-on-Tees.—Apprentices training school to be built by ICI, Ltd., cost £100,000. Work expected to begin at early date.

Birmingham.—Public Works Com considering proposed multi-storey car park, to be erected at junction Bull Ring/Moor-st., est. cost £1m.

Blackpool.—BC negotiating with Gregory Housing, Ltd., 27, Chapel-rd., Worthing, for erection of 42 three-storey flats at Mereside.—Approved following for inclusion in 1955/6 programme: Erection of gymnasium at Highfield Sec. Mod. Sch.

Blackrod.—UDC considering erection of village hall, £10,000 est.

Blaydon (Co. Durham).—UDC approved plans by A. D. Bird, Ltd., builder, Scotswood-rd., Newcastle-on-Tyne, for erection of 26 houses in Lintzford-rd., Rowlands Gill.

Bolton.—BC approved layout for 43 houses and flats at Deepdale-rd. and 8 bungalows adjoining Mary Lawns on Breightmet Neighbourhood Unit.—Approved plans: Extensions to Mount St. Joseph Convent, Willows-la. for Rev. Mother M. Murray; office block at Springfield Paper Mill off Bradford-st. for W. J. Marshall & Co., Ltd.; extensions to works and new office block off Settle-st. for Bolton Brick Co., Ltd.; warehouse, offices and sanitary accommodation at Halliwell Mills, Bertha-st., for Greenhalgh and Shaw, Ltd.

Brierley Hill.—Licensing justices approved erection of PH on Nagersfield estate for Wolverhampton and Dudley Breweries, Ltd.

Brighouse.—BC to erect factory building on Wakefield-rd. Industrial estate for leasing to W. & A. Thompson, Ltd.—BE prepared layout for 8 shops on Rastrick Field-la. estate.

Brighton.—TC to build 34 flats in block of six storeys on Somerset-st./Upper Bedford-st. site, cost £86,000 (est.). Plans by BE&S, 26-30, King's-rd., Brighton 1.

Bromsgrove.—RDC propose modernising 16 houses at Lyes Meadow, Alvechurch, and 6 houses at Redhill-pl., Hunnington; approved 46 houses at The Gaunts site, Alvechurch, 22 at Hartle-la., Belbroughton, 12 at Dark-la. and St. Kenelms-rd., Romsley, 30 at Shaw-la. and 10 at Penmanor, Stoke Prior, and 54 at Shawhurst, Wythall; approved erection of housing estates at Maypole, Wythall, for Biddle and Homer, Ltd.; Crown Meadow, Alvechurch, for Central Area Estate, Ltd., and off Worcester-rd., Hagley, for Leasowes Building Co., Ltd.—UDC approved plans, offices, coldstore and store off Church-st. for Marsh and Baxter, Ltd.

Carlisle.—TC approved plans for 30 houses at Etterby Lea for Border Engineering Contractors, Ltd., 125, Queen's-st., Whitehaven; new factory at Botcherby for the Metal Box Co., Ltd., London.

Chesterfield.—Licensing magistrates approved erection of licensed premises at junction Dorset-dr./Somerset-dr., New Brimington, for William Stones Brewery Co., Ltd.

Colne.—TC to prepare sketch plans for community centre at Primet Hill.

Coventry.—TC approved new licensed premises at Binley-rd. and Omar-rd. for Atkinsons Brewery Co., Ltd., Queen's-rd., Birmingham. Architect, J. E. Reeves, 15, Bernard-rd., Edgbaston, Birmingham.

Dewsbury.—EC to prepare plans for infants' school with nursery unit at Show Cross, £30,000 est.

Douglas (IoM).—Victoria Pier Arcade to be renovated and modernised within next two years, est. cost £20,000 (included in Harbour Board estimates). £19,100 also voted towards Harbour Board installations at Ramsey.

Durham.—CC proposes including in 1955-56 building programme, schemes for first instalment of Ferryhill College of FE and second instalment of Hebburn Technical College and Durham City Technical College. County A, G. R. Clayton, Court-la., Durham. M of E approved CC's scheme for construction of new infants' school at South Stanley.

Eston.—UDC asked Surveyor, N. C. Harrison, to prepare estimate of cost of building new civic buildings.

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Grams: DOHMS, LONDON

Felling-on-Tyne.—UDC negotiating with G. Wimpey & Co.; Orchard House, and J. Clark & Son, New Seaham, Durham, for building of more houses.

Gateshead.—BE, G. F. Winters, prepared revised plan for scattered children's home.—TC received loan sanction £17,400 for proposed alterations at Fountain-view Institution.—Jackson The Tailor, Ltd., Clayton-st., Newcastle-on-Tyne, to use five acres of land in Park-rd., Cateshead, for proposed factory.—Central Social Club to erect new premises and new site at Nuns-la.—TC considering erection of 13 houses on Wrekenton neighbourhood unit.

Gateshead.—During next 20 years TC intends demolishing 4,120 old houses (1,300 in the first five years). It is proposed to build multi-storeyed flats in Chandless-st. area. BE, G. F. Winters.

Gateshead.—Corpn. to build 12 blocks of "Dorin" houses at Glasshouse-la. and seven blocks of houses at Sheriff Hill. Plans by BS, G. Winters.—A. K. Smith's Delivery Vehicles, Ltd., Team Valley Trading Estate, to extend their factory and have had plans approved.

Hazel Grove and Bramhall.—UDC approved plans for additional store at Macclesfield-rd., Hazel-gr., for British Schering Manufacturing Laboratories, Ltd.

Hexham.—RDC to build 16 houses at Barrasford. Council's A, W. Dixon & Son, 1, Collingwood-st., Newcastle-on-Tyne.

Jarrow.—Church hall to be built at Hedworth in connection with St. Nicholas Church, and it is proposed to build church later. Architects, Cordingley & McIntyre, The College, Durham.

Jarrow-on-Tyne.—TC received loan sanction for £13,000 for proposed alterations and improvements to Jarrow Civic Hall, Ellison-st. Work will be carried out by direct labour and will take about six months. BE, H. W. T. Perkins.

Leeds.—New glass-fronted building to be erected in Hunslet industrial area by George Mann & Co., Ltd. Building is seven-storey office block for new headquarters to go up at junction Accommodation-rd. and Atkinson-st. and house administrative, design and accounts staff. It will have floor area of 24,000 sq. feet. Plans approved by TP Com. Architect, J. G. L. Poulson, LRIBA, of Pontefract. Work on building expected to start in May. Firm is also building two additional bays to erection shop in Accommodation-rd.

Liverpool.—Bents Brewery Co., Ltd., propose PH at Speke Hall-rd. Architect, Harold E. Davies, 18, Harrington-st., Liverpool.—Robertson, Buckley & Co., propose erection of large garage and petrol station at Bank Hall-la. Architects, Holford and Shennan, 80, Bedford-st., Liverpool.

Lymm.—UDC propose erection of 80 houses and 12 aged persons' bungalows on various sites.

Lytham St. Annes.—TC approved plan for 27 bungalows at St. Albans-rd., Shepherd-rd. and Rossendale-rd. for T. T. Bird, 229, Heyhouses-la., St. Annes.

Macclesfield.—TC propose adaptation of non-conformist chapel at The Cemetery to form crematorium.

Manchester.—Long and Crawford, Ltd., propose two-storey extension to works at Gorton-rd. near junction of Pottery-la./Gorton-la., West Gorton. Architects, Roberts and Roberts, 40, King-st., Manchester.—Lewis's, Ltd., propose erection of warehouse and offices on site bounded by Fountain-st., Marble-st. and West Mosley-st. Architects, J. W. Beaumont & Sons, Danlee-bldgs., Spring-gdns., Manchester.—TC approved erection of office and warehouse premises on vacant site at corner Riga-st., Mayes-st. and North-st., Shudehill, for exors. of I. W. Cohen. Plans submitted by W. H. Sutton & Sons, estate agents, 60, Spring-gdns., Manchester.

Middlesbrough.—Plans being prepared by T. A. Crawford, 80, Borough-rd., for proposed church and presbytery in Chantry-cl. for Rev. T. A. Nolan.—Plans by J. A. Kenyon, BE, for children's home at Park End and also for 28 houses at Park End approved.

Newcastle-on-Tyne.—City C received loan sanction for £46,666 for construction of new premises for lighting department.—C. Solomon, St. Mary's-pl., Newcastle, is architect for proposed showroom and warehouse in Blenheim-st. and Sunderland-st. for N. Baker.—Darlington Insulating Co., Ltd., 38, Great North-rd., Newcastle, to erect warehouse at Bridgecres. Tynos Works. Plans approved.—C. A. Parsons & Co., Ltd., considering developments at South Heaton Works, cost £2m.

Newcastle-on-Tyne.—New wing with 5,000 sq. ft. floor space built at General Hosp. as first stage of new dept. A. P. H. Knighton, "Dunisa," Osborne-rd.—Plans by J. M. Angus, Sovaine-pl., approved for new social club at Newburn-on-Tyne.—City C approved plans by Northern Gas Board, 30, Grainger-st., for demolition work and alterations at Dunn-st. works.

Northampton.—C of E Auths. propose erection of church on Kings Heath estate, £18,000 est. (Rev. Grenville Morgan, Vicar of Darlington, responsible for project).

North Riding.—1956-57 school building programme (subject to Min. approval): Sec. schools at Scarborough (£224,000); Richmond (£187,000); Thornaby (£140,250); and Eston (£140,250). Prim. schools at Wilton (£21,700); Bainbridge (£16,000); Stockton-on-Forest (£21,700); Osbaldwick (£30,500); Sleights (£21,700); and Linton RAF Station (£20,000). Special school at Redcar (£35,500). Extensions to sec. schools at Guisborough (£32,500); Malton (£42,000); Richmond (£44,000); and New Earswick (£40,000).

Northwich.—Licensing justices approved erection of PH to be known as "Pillar of Salt" at Clifton-dr.

off Old Hall-rd., Leftwich, for Peter Walker (Warrington), Ltd.

Nottingham.—TC approved plans for erection of licensed premises at junction Bracebridge-dr./Inglesby-cres. for Mitchells and Butler, Ltd.

Otley.—West Riding CC propose erection of canteen and kitchen at Otley Sec. Sch.

Plymouth.—Robert Potter, architect, preparing plans for new parish Church of St. Christopher's, Crownhill. Final plans to be ready in about month and will be submitted to Parochial Church C (priest-in-charge, Rev. Eric Turnbull). Foundation stone probably will be laid next November.

Rotherham.—ABC Cinemas, Ltd., propose rebuilding of Whitehall Cinema, High School.

Runcorn.—RDC propose 33 houses at Ship-st., Frodsham, and 12 off Station-rd., Sutton Weaver.

St. Helens.—TC approved layout for 70 houses at East Lancs-rd. estate.

Salford.—TC approved layout for 60 flats on site bounded by Brewery-st., St. Stephen's-st., Rigby-st. and Church-st.

Scarborough.—G. W. Alderson, 4, Pavilion-ter., Scarborough, architect for proposed bakery in Gladstone-st. for D. Wray & Sons, Ltd.—BE, H. V. Overfield, prepared £45,000 scheme for construction of sea wall around South Bay bathing pool for proposed sea defence works.

Seaham.—UDC has offered contract to Veti & Edwards, Ltd., 22, Foyle-st., Sunderland, for erection of 22 houses on land formerly earmarked for educational purposes on Westlea Estate. A. M. Smith, surveyor.—UDC approved erection of factory for J. Barran & Co., Leeds.

Southport.—EC to prepare quantities for high school for girls at Hillside.

South Shields.—EC approved preliminary draft plans for new junior mixed sch. at Biddick Hall. A. J. Smeds, 29, King-st., South Shields.

Staffs.—EC propose erection of college of FE at Newcastle under Lyme in 1956/7 programme.

Stanley (Co. Durham).—Beamish Park Golf Club to erect club premises near Beamish Hall.—Vicarage proposed at South Moor for Rev. F. T. Barber.

Sunderland.—Thorn Electrical Industries, Pallion Trading Estate, have acquired 60,000 sq. ft. site on estate for new factory to employ 200 people.

Tow Law (Co. Durham).—UDC received inquiry from firm on Aycliffe Trading Estate, near Darlington, regarding factory space at Tow Law.—Council suggested that one of the 12 atomic power stations planned by Government be built in Tow Law area.

Tutbury (Staffs).—RDC propose erection of 50 houses at Church-rd. estate, Stretton.

Tynemouth.—Plans for petrol station on North-rd. for F. Currell approved. Architects, G. H. Gray & Ptnrs., Camden-st., North Shields.

Walton.—Metropolitan Water Brd. propose to complete storage reservoir started in 1939.

Wednesbury.—TC to allocate site on Portway-rd. industrial estate to Hallen Engineering Co., Ltd., Trinity-rd., Bilston; N.D. Jig and Gauge Co., Ltd., 118, Elwell-st.; and W. W. Grew & Co., Loxdale-rd., for erection of factories.

Whitehaven.—Plans for reinforced concrete silos for Marchon Products, Ltd., prepared by Ronald Ward & Ptnrs., architects, 29, Chesham-pl., Belgrave-sq., SW1.

Windsor.—Estimate of £250,000 for modernising sanitary and engineering services of Windsor Castle included in Civil Estimates List for 1955-56. If estimate is passed it is hoped to start work at end of year or early next year, MoW stated.

Workington.—BC to invite tenders for 120 houses on Moorclose Valley estate. Approved plans: Petrol filling station at Oxford-st. and Park-la. for J. Harris, 4, William-st., Workington; shops and offices at Murray-rd. for Timothy Whites and Taylors, Ltd., Burley Hill, Leeds, 4. Plans by Staff A, L. G. Booth.

Worksop.—Worksop and Retford Brewery Co., Ltd., Priorwell Brewery, Worksop, propose erection of hotel on Kilton Hill estate. Architects, J. Haslam & Son, 5, Newcastle-ave., Worksop.

Wrexham.—BC propose erection of Guildhall at Llwyn Isaf. £13,920 est. Architects, Stephenson, Young & Ptnrs., 6, Bluecoat-chbrs., Liverpool, 1.

TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

Ashington (Northumberland).—36 houses, for UDC: *Direct labour.

Bangor.—Technical college, for Caernarvonshire CC: *Williams & Williams, Ltd., Cae Mur, Caernarvon, £100,000 approx.

Barrow-in-Furness.—Erection of Walney Cty. Jun. Sch., Mill-la., Walney Island, for CBC. Borough Engineer and Surveyor. Quantities by Poole & Dick, F/ARICS, Manchester: *Corporation Building Department, Salthouse-rd., Barrow-in-Furness, £50,758.

Belvedere (Kent).—Warehouse, for W. & R. Jacob & Co. (Liverpool), Ltd: *C.A.S. (Contractors), Ltd. Foundations: Andrews Kent & Stone. Steel frame: T. C. Jones. Aluminium decking roof: Briggs. Anti-actinic glazing: Mellowes. Est. cost, £123,000. Architect, A. B. Waters, FRIBA (Llewellyn Smith & Waters).

Billingham-on-Tees.—99 " No Fines " houses on the Roseberry-rd. housing estate, for the UDC. Surveyor. J. H. Shepherd: *Wimpey & Co., Ltd., Orchard House, Newcastle-on-Tyne, £135,788.

Brierley Hill.—Civil buildings for UDC. Architect and Housing Director, Brierley Hill Urban District Council: *E. Fletcher (Builders), Ltd., 35, High-st., Kingswinford, Brierley Hill, £49,068.

British Railways.—The Eastern Region announce that the undermentioned contracts have been placed:—Johnson & Phillips, Ltd., Charlton, SE7, supply, delivery and installation of medium-voltage cables at Doncaster Works. Wright, Anderson & Co., Ltd., GPO Box No. 2, Gateshead, 8, Co. Durham, supply, delivery and erection of structural steelwork for one portal-framed building and two maintenance platforms for new diesel maintenance depot at Norwich. Holmpress Piles, Ltd., Barnsley-st., Hull, construction of foundation piles for new diesel maintenance depot at Norwich. British Thomson-Houston Co., Ltd., Crown House, Aldwych, WC2, supply, delivery and erection of sub-station and track sectioning cabin equipment for Shenfield-Chelmsford-Southend electrification. Bernard Pumfrey, Ltd., Wintern Works, Lea-rd., Gainsborough, Lincs, repairs to inspection pits and pavings at Doncaster Carr motive power depot. Tersons, Ltd., 4, Dollis-park, Finchley, N3, maintenance of permanent way in Doncaster district between Newark Northgate and Doddington and Harby. Butterley Co., Ltd., Butterley, Derbyshire, reconstruction of flooring of Underline Bridge No. 66 over the Fossdyke Navigation between Branston and Saxilby.

Bromsgrove.—Further 96 dwellings at the Charford Estate, for UDC: *C. Bryant & Sons, Birmingham, £131,288.

Burnley.—Houses for BC at Far Brunshaw Estate: (57) *Direct Labour; (26) *Russell Bros., Ltd., Wades House-rd., Nelson.

Bury.—Gymnasium and changing-rooms at Elton Secondary Modern School, for EC: *Spencer Clarke, Ltd., Elton Sawmills, Bury.

Caernarvonshire.—Technical College, Bangor, for EC. Architect, Westbury Lloyd Jones, LRIBA, AIStructE, County Architect, Caernarvon. Quantities by above: *Williams & Williams (Caernarvon), Ltd., Llys Meirion Estate, Caernarvon, £116,847.

Carlisle.—Offices, bakery and garages at the Durranhill Industrial Estate, for W. C. Robertson (Carlisle), Ltd., Watson-st., Carlisle: *John Laing & Son, Ltd., Dalston-rd., Carlisle.

Chester.—22 houses and four flats at Quarry-la., Christleton, for RDC: *T. Warrington & Sons, Ltd., 82, Station-rd., Ellesmere Port, £30,897.

Crawley.—Factory, Industrial Estate, for Dev. Corpn. Architect, H. S. Howgrave-Graham, ARIBA, AMPTI. Quantities by Gardiner & Theobald: *E. H. Smith (Croydon), Ltd., Beddington-la., Croydon, Surrey, £230,504.

Crawley.—Extension to existing factory, for Dev. Corpn. Architect, A. E. Barnard FRIBA, 9, Victoria-st., SW1. Quantities by E. Spriggs & Ptnrs.: *James Longley & Co., Ltd., East Park, Crawley, Sussex, £92,987.

Dukinfield.—Construction of a municipal laundry at Boyds Walk, for TC: *S. Kelly Bros., Ltd., Croft Works, Manchester-rd., Audenshaw.

Felling (Co. Durham).—Public-house at the corner of Sunderland-rd. and Lingey-la., for J. Rowell & Son, High-st., Gateshead. Architects, Wetherall & Lamb, " Tweedholme," Picton-pl., Newcastle-on-Tyne: *Thomas Clements & Son, Selborne-gdns., Newcastle.

Frome.—Eight pairs of houses and four blocks of four flats, Rodden-rd. site, for UDC. Engineer and Surveyor, B. H. Parkes: *Holtby & Dudman, Rector's-way, Weston-super-Mare, £45,322. (Subject to Ministry approval.)

Gateshead.—23 houses at Fountains View for TC: *W. and D. Allison, builders, Whitburn, Sunderland.

Glasgow.—Two ten-storey blocks of flats at Toryglen. (In all there will be 59 three-apartment houses to be equipped with lifts and there will also be a laundry.) Archibald G. Jury, FRIBA, Housing Architect, Glasgow Cross, The Trongate, Glasgow: *The Scottish Special Housing Association, Ltd., Palmerston-pl., Westend, Edinburgh.

Hamilton.—Additions and alterations to the annexe at the Academy. William A. Watt, FRIBA, Education Architect, County Offices, Albert-st., Motherwell-Wishaw. Excavation, brick, building and allied works: £6,763, *Wilson & Sons, Ltd., Hamilton, Joinery, carpentry, ironmongery and allied works: £8,486, *J. and C. Fleming & Co., Ltd., 23a, Barnst., Strathavon.

Hebburn.—100 houses at Monkton-la. for UDC. Plans by the Surveyor, H. C. Bestow: *Direct labour.

¶London (Admiralty).—Particulars of contracts over £1,000 in value:—*Warwick*: Building works, H. Clarke & Sons, Ltd., 48, Coronation-rd., Coventry. *Fife*: building works, Colin Morris & Son, 7, Preston-cres., Inverkeithing; building works, James Miller & Partners, Ltd., 18, George-st., Edinburgh 2. *Kent*: construction of RC ducts, Gough Cooper & Co., Ltd., Wilmington, Dartford, Kent; building works, Gough Cooper & Co., Ltd., Wilmington, Kent. *Lancs*: land drainage, A. T. Brickwood, Ltd., Burton-on-the-Wold, Loughborough, Leics. *Devon*: structural steelwork, Dorman Long (Bridge and Engineering), Ltd., Middlesbrough. *Hants*: installation of heating system, Norris Warming Co., Ltd., 18, Hampshire-ter., Portsmouth.

London (City).—Superstructure contract for redevelopment of 4-9, St. Mary-axe, EC3, known as " Brown's Buildings," as extension of headquarters for Cayzer Irvine & Co., Ltd. Architects, Ronald Ward & Ptnrs., 29, Chesham-pl., Belgrave-sq., SW1: *H. Fairweather & Co., Ltd., £134,000.

¶London (MoW).—Contracts placed by Ministry of Works for week ended March 19:—*Berkshire*: telephone exchange, Reading, alterations and extensions, Boyd & Murley, Ltd., 87, London-rd., Reading; Blacknest Hostel, Aldermaston, extension of hostel, W. E. Chivers & Sons, Ltd., Devizes, Wilts. *Cambridgeshire*: Government Offices, Blocks " A " and " C," Brooklands-av., Cambridge, internal decorations, Baxter Bros. (1920), Ltd., Collingwood Buildings, Newcastle-on-Tyne 1. *Essex*: " Melody Inn," Hamlet Court-rd, Westcliff-on-Sea, alterations, Taylor & Moore, 63/65, West-rd., Westcliff-on-Sea. *Lancashire*: Post Office Sorting Office, Preston Station, adaptations and extensions, Wm. Eaves & Co., Ltd., Daggers Hall Works, Vicarage-la, Blackpool; Min. Labour and NS, Aytoun-st., Manchester 1, internal and external decorations, Arthur Pugh & Co., Ltd., 236, Bolton-rd., Salford 6. *London*: St. James's Park, SW1, rebuilding of garage and cart shed, Holland & Hannen and Cubitts, Ltd., 258, Gray's Inn-rd., WC1; Heathfield-rd., SW18, erection and completion of a block of 18 maisonettes, Kyle Stewart (Contrs.), Ltd., 338, Kilburn High-rd., NW6; 83-91, Victoria-st., SW1, alterations, additions and improvements to lavatory accommodation (all floors), Marshall Andrew & Co., Ltd., 31, Queen Anne's Gate, St. James's-pk., SW1. *Middlesex*: Busch Corner, Twickenham-rd., Hounslow, erection of Hounslow/Ealing relief telephone exchange, E. H. Burgess, Ltd., 34, Grosvenor-gdns., SW1.

¶London (War Dept.).—Contracts placed by War Department for week ended March 19:—*Hampshire*: building work, Benroy Builders, Ltd., Southampton; building work, Henry T. Hill & Son, Ltd., Brookwood. *Kent*: heating and hot water installation The Ray-Heating Co., Ltd., Leatherhead. *Lanarkshire*: building work, William S. Gordon & Co., Glasgow. *Leicestershire*: building work, W. J. Simms Sons & Cooke, Ltd., Nottingham. *London*: electrical installation, Cable Jointers, Ltd., London. *Merioneth*: roadwork, Trinidad Lake Asphalt Co. (North Western), Ltd., Liverpool. *Wiltshire*: road work, Constable Hart & Co., Ltd., Cosham; ventilation system, C. W. Hinchcliffe, Bournemouth; building work, James Stewart and Williams, Ltd., London. *Yorkshire*: building work, J. H. Metcalf Bros., Doncaster.

Maidstone.—Loose, 10 houses; Staplehurst, 4 flats; Marden, 12 bungalows; Yalding, 4 houses, for RDC. Engineer and Surveyor, J. H. Nicholson. Quantities by S. R. Nolans & Co. Loose, *H. Goodsell, Maidstone, £13,420; Yalding, *J. W. Fernall & Son, Cudham, nr. Sevenoaks, £5,735; Marden, *J. W. Fernall & Son, Cudham, nr. Sevenoaks, £14,414; Staplehurst, *H. Goodsell, Maidstone, £5,474.

Manchester.—Factory at the Wythenshawe Industrial Estate, for Geigy, Ltd.: *Pochins (Manchester), Ltd., King-st., Middlewich. Two factories at Bent-st., Cheetham, for Cheetwood Estates, Ltd.: *A. Cassell & Sons, Ltd., 1-3, Teneriffe-st., Salford.

Melksham (Wilts).—45 houses on the Lambourne Farm estate for UC, *Gregory Construction (South Western), Ltd., Bristol, £63,569.

Middlesbrough.—28 houses in Adcott-rd., etc.: *Shannon (Contractors), Ltd., Marsh-rd., Middlesbrough.

Middlesbrough.—Ten police houses at Park End for the TC. Borough Engineer, J. A. Kenyon: *R. H. Bailey & Son, Denmark-st., Middlesbrough, £13,791.

Middlesbrough.—Middlesbrough Fire Station for the TC. Borough Engineer, J. A. Kenyon: *Thornton Construction Co., Bridge-rd., Stockton-on-Tees, £13,086.

Millom.—12 houses at The Green, for UDC: *T. Armstrong, Ltd., £21,375.

Newcastle-on-Tyne.—18 houses and 7 garages in Bavington-dr. Architects, Dryden and Shaw, 6, Market-st., Newcastle: *Carr and Kirk, Ltd., Stocksfield-ave., Newcastle.

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Newcastle-on-Tyne.—Alterations to stores in Clayton-st. for Hardy & Co., furnishers, etc. Architect, C. Solomon, St. Mary's-pl., Newcastle-on-Tyne:

*W. Marshall, Ltd., 10, Eldon-sq., Newcastle.

Nottingham.—18 houses and six garages at Hollington-rd., Beechdale Estate, for TC: *J. W. Stamp & Co., Ltd., Nuthall-rd., Bobbers Mill, Nottingham, £28,103.

Notts.—Following, for EC: Mansfield Cumberlands Primary School: *A. G. Clower, Ltd., Daybrook-sq., Nottingham, £177,456. Arnold-la. Gedling County Secondary School: *M. D. Sweeney & Palmer, Ltd., Beechdale-rd., Aspley, Nottingham, £113,900. New primary school at Calverton: *W. H. Herries, Foxwell-rd., Carlton, Nottingham, £57,562. Primary school at Edwalton: *J. W. Stamp & Co., Ltd., Nuthall-rd., Nottingham, £57,762. Extensions and alterations at Worksop Technical College and Ollerton County Secondary School: *Herbert Beggaley, Ltd., Baums-la., Mansfield, £39,473 and £38,748. Extensions at Hopwell Hall Special School: *H. Orton & Sons, Ltd., Craig-st., Long Eaton, £11,624.

Oldham.—Secondary modern school, Fitton Hill, for CBC. Architect, John W. Hitching, AIAA. Quantities by T. Sumner, Smith & Ptnrs., Manchester.

Wm. Henshall & Son, Ltd.
Harry Wimpinny & Son, Ltd.
Whitworth Whittaker & Co., Ltd.
James Hartley & Son, Ltd.
*T. Partington & Son. (Builders), Ltd., Stock Lane, Chadderton-Oldham.

Roxburghshire.—36 houses at the Housing Farm site at Burnfoot, Hawick. George Bee, FRIBA, Council Architect, Municipal-bldgs., Hawick: *Weirs Housing Corporation, Calder-st., Wifflet, Coatbridge.

Salop.—Welfare centre at Madeley, for CC: *J. Bromley & Sons, Ltd., Church Stretton, £10,497.

Stockport.—36 dwellings and children's home at Brinnington, for BC: *E. Entwisle, Ltd., 34, Victoria-st., Altrincham, £49,718. 68 dwellings at Brinnington Estate: *Poole & Foster, Ltd., 49, Plymouth-ave., £85,361.

Stockton-on-Tees.—25 houses and three blocks of three-storey flats on the Newtown estate for TC. Plans by the Boro' Architect: *Direct labour.

Swindon (Wilts).—Factory to be leased to the Plessey Co., Ltd., *Messrs. T. Wilson & Son, Ltd., Northampton, £98,687, and factory to be leased to Clover Leaf Products, Ltd., *Clark Bros., £43,128, for Corpn.

Tynemouth.—12 flats in Marina-ave., North Shields, for the TC: *Graham & Son, Killingworth, £17,340.

Walthamstow.—Hoe-st./Church-hill redevelopment area. Erection of offices and flats on the site. Constructional steel work: *H. Young & Co., Ltd., of Nine Elms Steel Works, Burwell-rd., Leyton, E10 (sub-contractors for the constructional steel work), £11,507.

Whitby.—Reconstruction of Whitby Fish Quay for the UDC. Engineers, Lewis and Duvivier, Grosvenor-gdns., S.W.1: *J. G. Thompson & Sons, Fowler-st., South Shields, £85,511 (approved by Ministry).

Woolwich.—"Ravensbourne House," 49, Eltham-rd., Lee, erection of 16 flats at rear: *Direct labour, £28,741.

Woolwich.—Coldharbour Estate, erection of estate office, library and five flats: *Direct labour, £18,300.

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